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**Piccoli et al.**

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(54) **SECURITY SURROUND DEVICE WITH CORD LOCK**

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(51) **Int. Cl.**
***E05B 65/00*** (2006.01)
***E05B 73/00*** (2006.01)

(52) **U.S. Cl.**
CPC ..... ***E05B 73/0017*** (2013.01); ***E05B 73/0029*** (2013.01)
USPC ..... **70/58**; 70/14; 70/57; 70/57.1

(58) **Field of Classification Search**
USPC ..... 70/14, 18, 19, 30, 49, 57, 57.1, 58, 419
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | | |
|---|---|---|---|---|
| 343,849 | A * | 6/1886 | Pond | 24/129 R |
| 394,739 | A | 12/1888 | Toulmin et al. | |
| 437,548 | A * | 9/1890 | Anderson | 24/127 |
| 886,905 | A | 5/1908 | Ward | |
| 1,124,130 | A * | 1/1915 | Grant | 24/18 |
| 1,165,816 | A * | 12/1915 | Tichenor | 24/18 |
| 2,190,661 | A * | 2/1940 | Hauer | 70/49 |
| 2,440,012 | A * | 4/1948 | Haver | 70/18 |
| 3,612,587 | A | 10/1971 | Rubin | |
| 3,817,064 | A * | 6/1974 | Sallee | 70/58 |
| 4,528,217 | A | 7/1985 | Spathis et al. | |
| 4,979,382 | A * | 12/1990 | Perry | 70/58 |
| 5,517,835 | A * | 5/1996 | Smith | 70/14 |
| 5,595,073 | A * | 1/1997 | Sullivan | 70/18 |
| 5,794,464 | A | 8/1998 | Yeager et al. | |
| 6,092,401 | A | 7/2000 | Sankey et al. | |
| 6,188,320 | B1 | 2/2001 | Kolton et al. | |
| 7,129,841 | B2 | 10/2006 | Feibelman | |
| 7,481,086 | B2 | 1/2009 | Fawcett et al. | |

(Continued)

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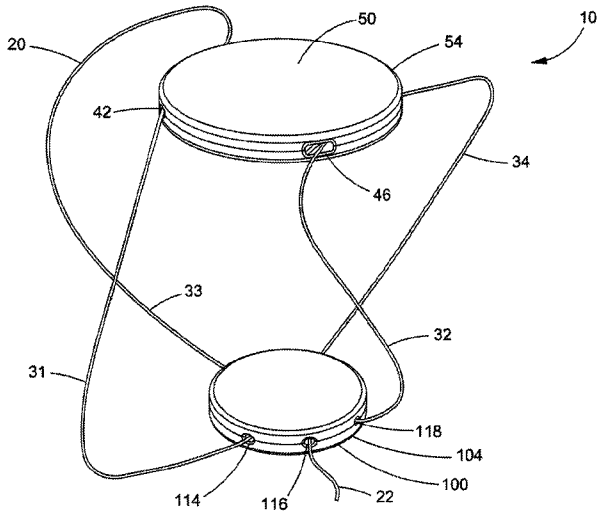
(57) **ABSTRACT**

A security device and method to surround merchandise for theft deterrence. The security device includes a cord and housing for a knot in the cord. The cord is pulled from one end about the knot to tighten cord around a product and the cord is pulled from another section to lock cord in place around the product. The device serves to deter breaking in or stealing merchandising product. The security device may also include an additional housing for the cord to pass through. Either housing may include an EAS and/or RFID element for additional security.

**31 Claims, 22 Drawing Sheets**



(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | | |
|---|---|---|---|---|
| 7,543,466 | B2 * | 6/2009 | Loughlin et al. | 70/8 |
| 7,784,313 | B2 * | 8/2010 | Wyers | 70/49 |
| D628,924 | S | 12/2010 | Sayegh et al. | |
| 7,918,112 | B2 | 4/2011 | Fawcett et al. | |
| 8,044,806 | B2 * | 10/2011 | Sayegh | 70/57.1 |
| 8,234,757 | B2 * | 8/2012 | Lesley | 70/18 |
| 8,528,372 | B2 * | 9/2013 | Nilsson | 70/57.1 |
| 2008/0236209 | A1 | 10/2008 | Conti et al. | |
| 2010/0139336 | A1 | 6/2010 | Necchi | |
| 2010/0155265 | A1 | 6/2010 | Kidd | |
| 2013/0067967 | A1 * | 3/2013 | Olear et al. | 70/18 |

* cited by examiner

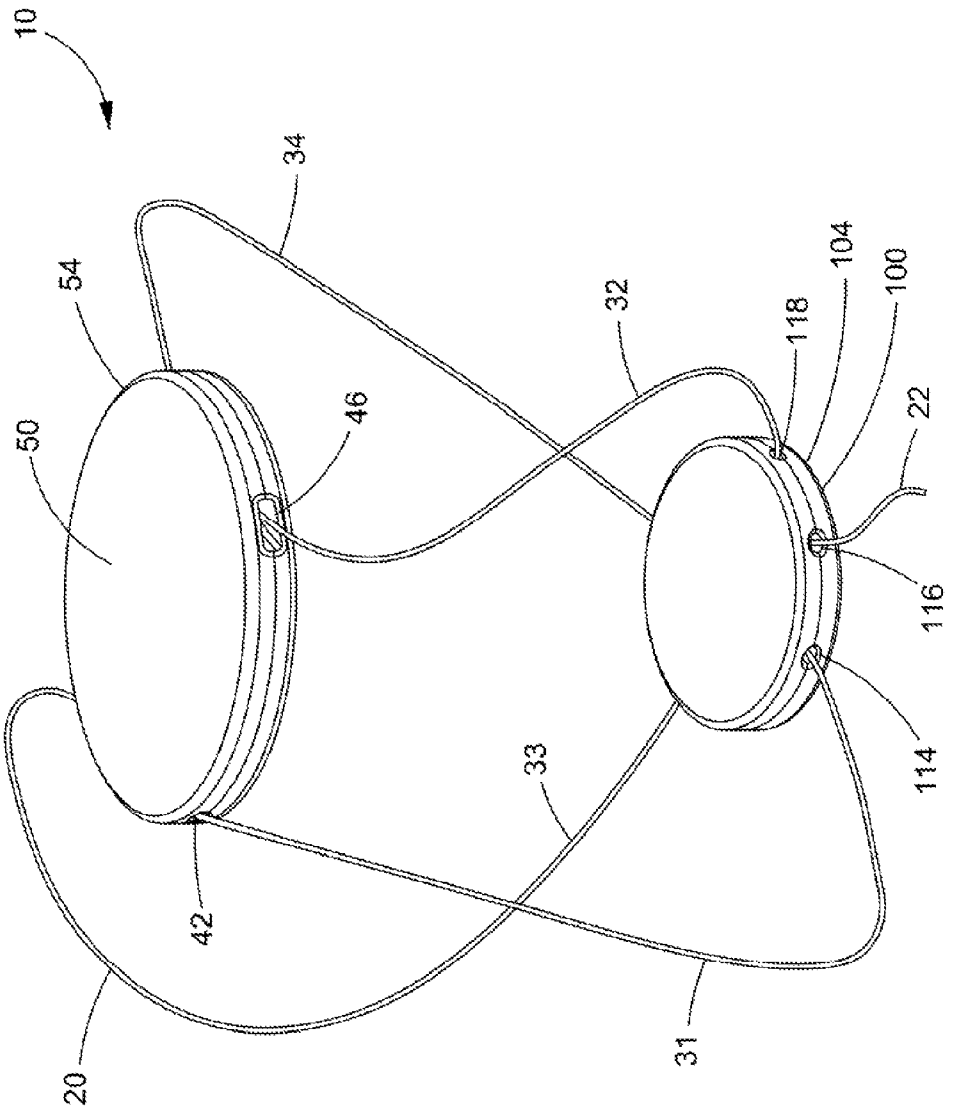



FIG. 1

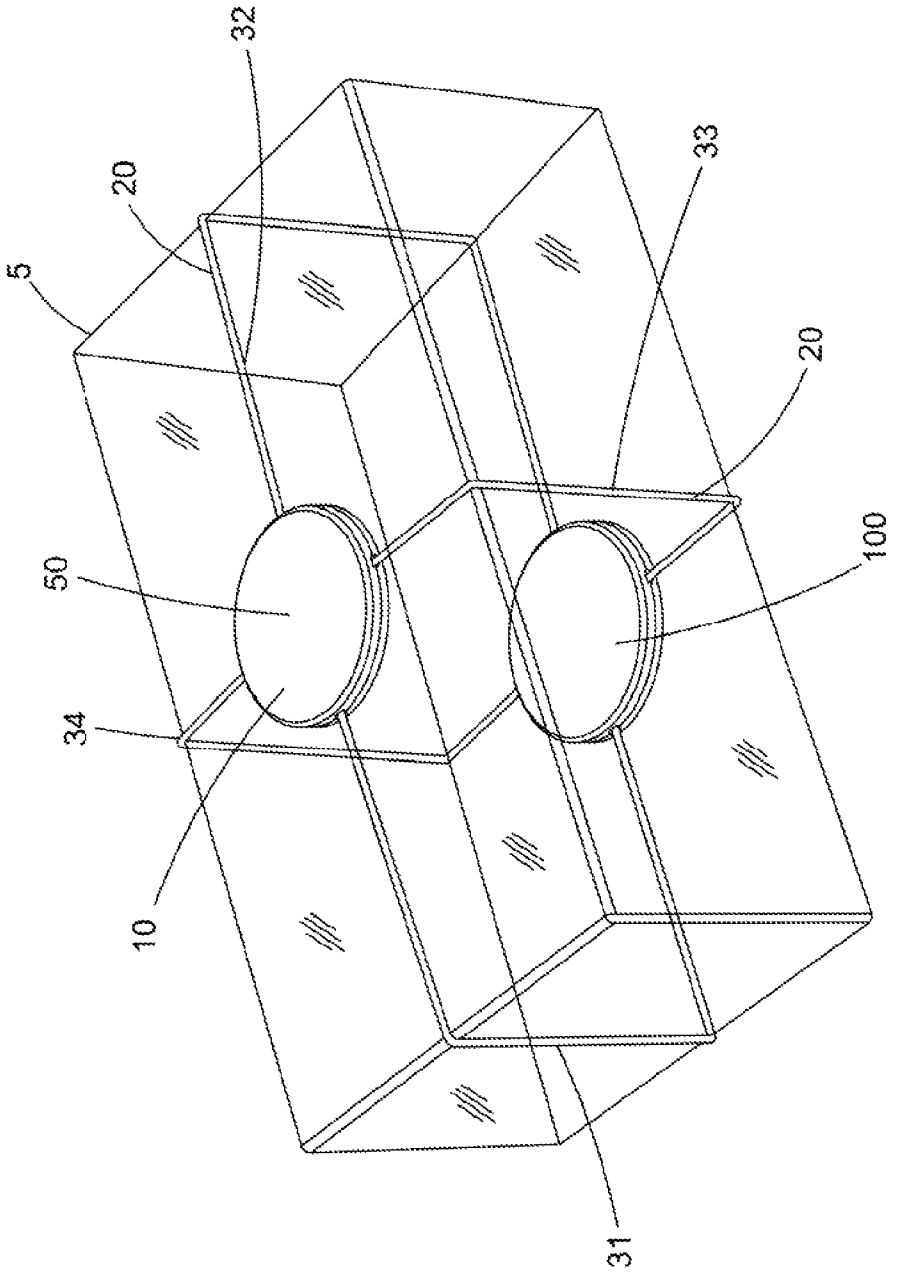
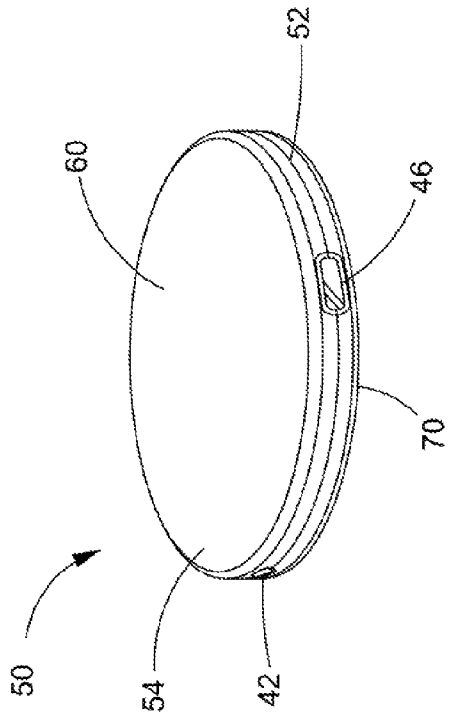



FIG. 2



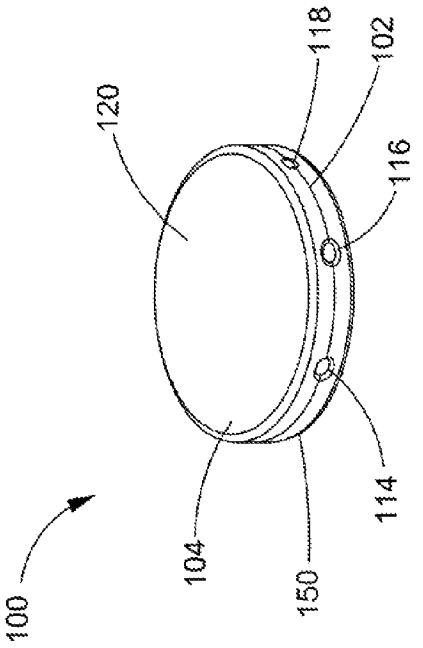




FIG. 3

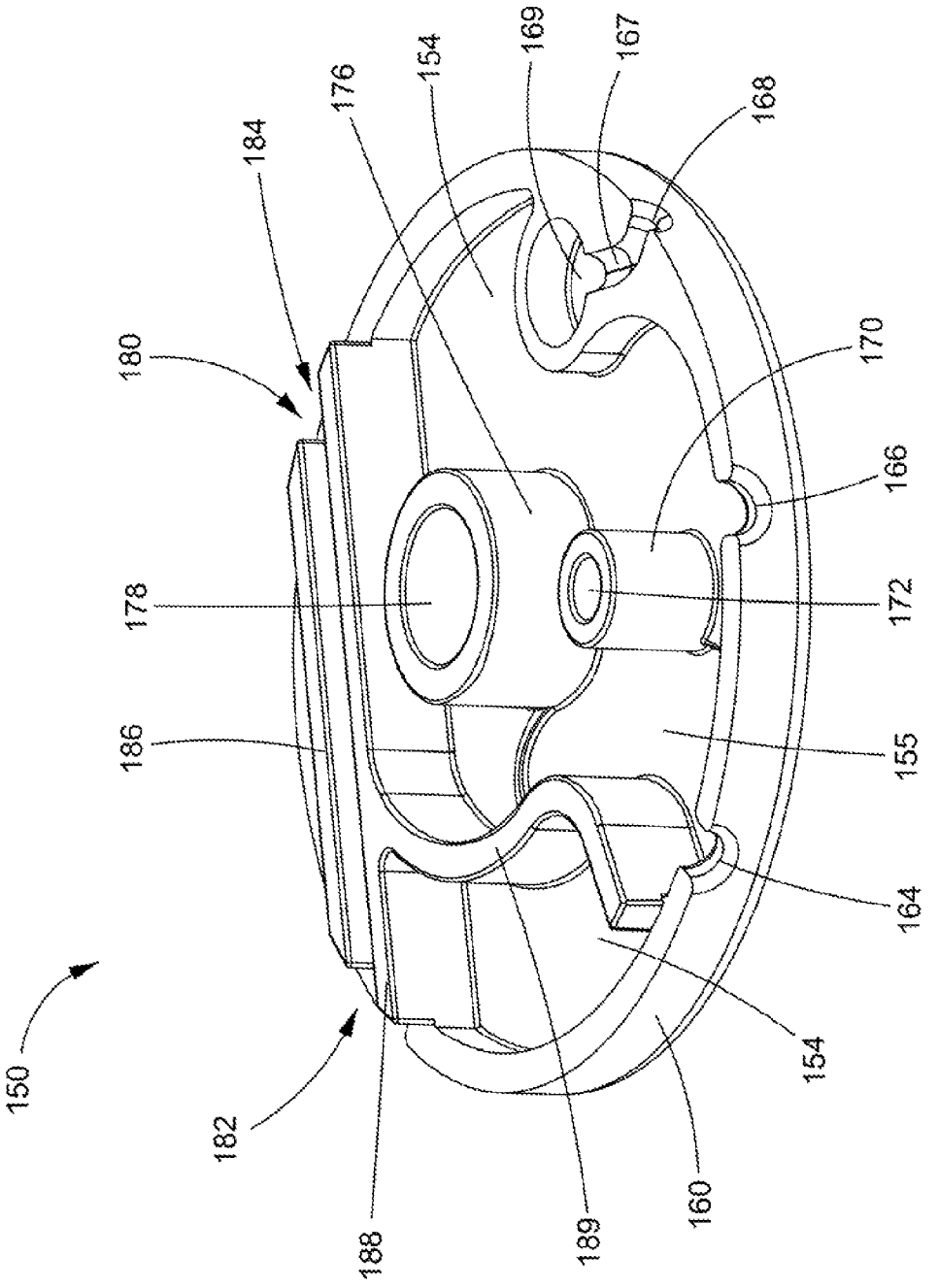

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FIG. 4A

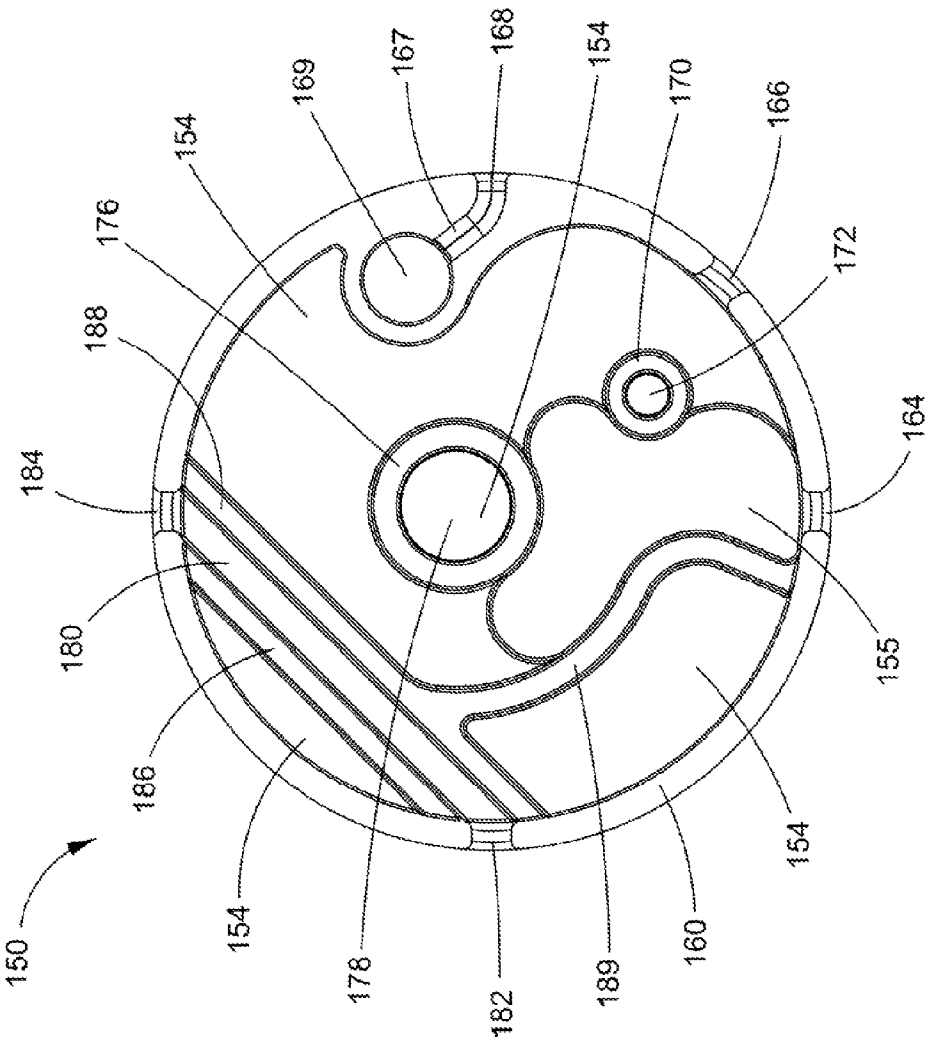
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FIG. 4B

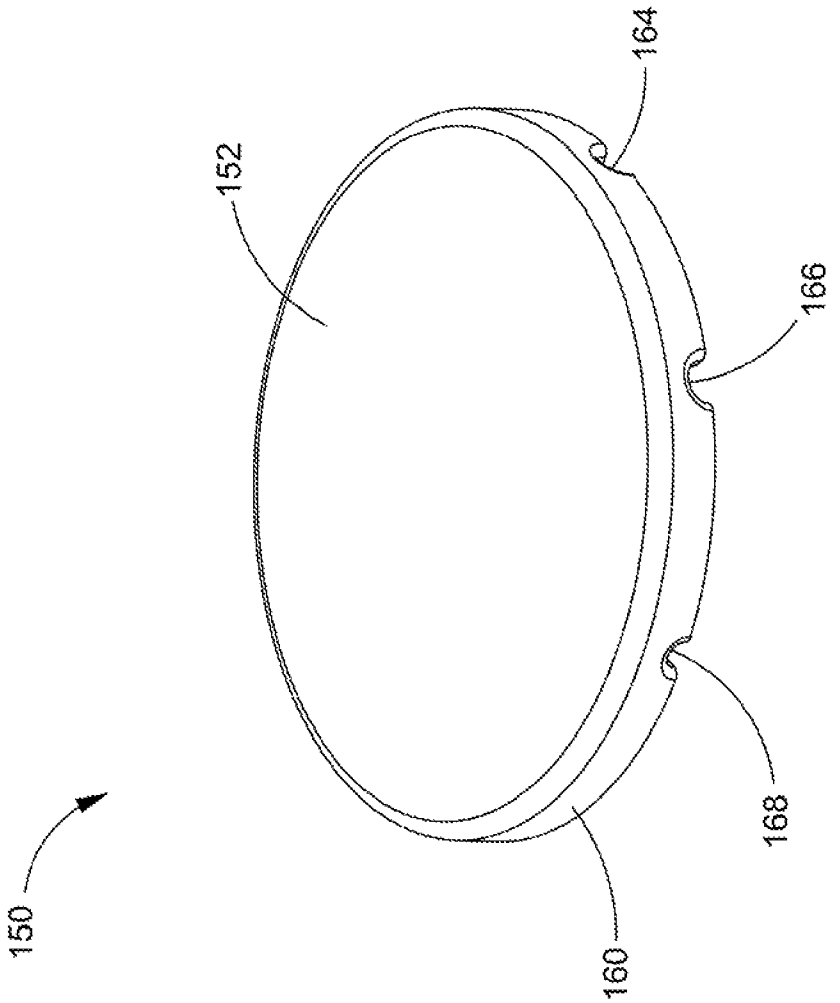



FIG. 5

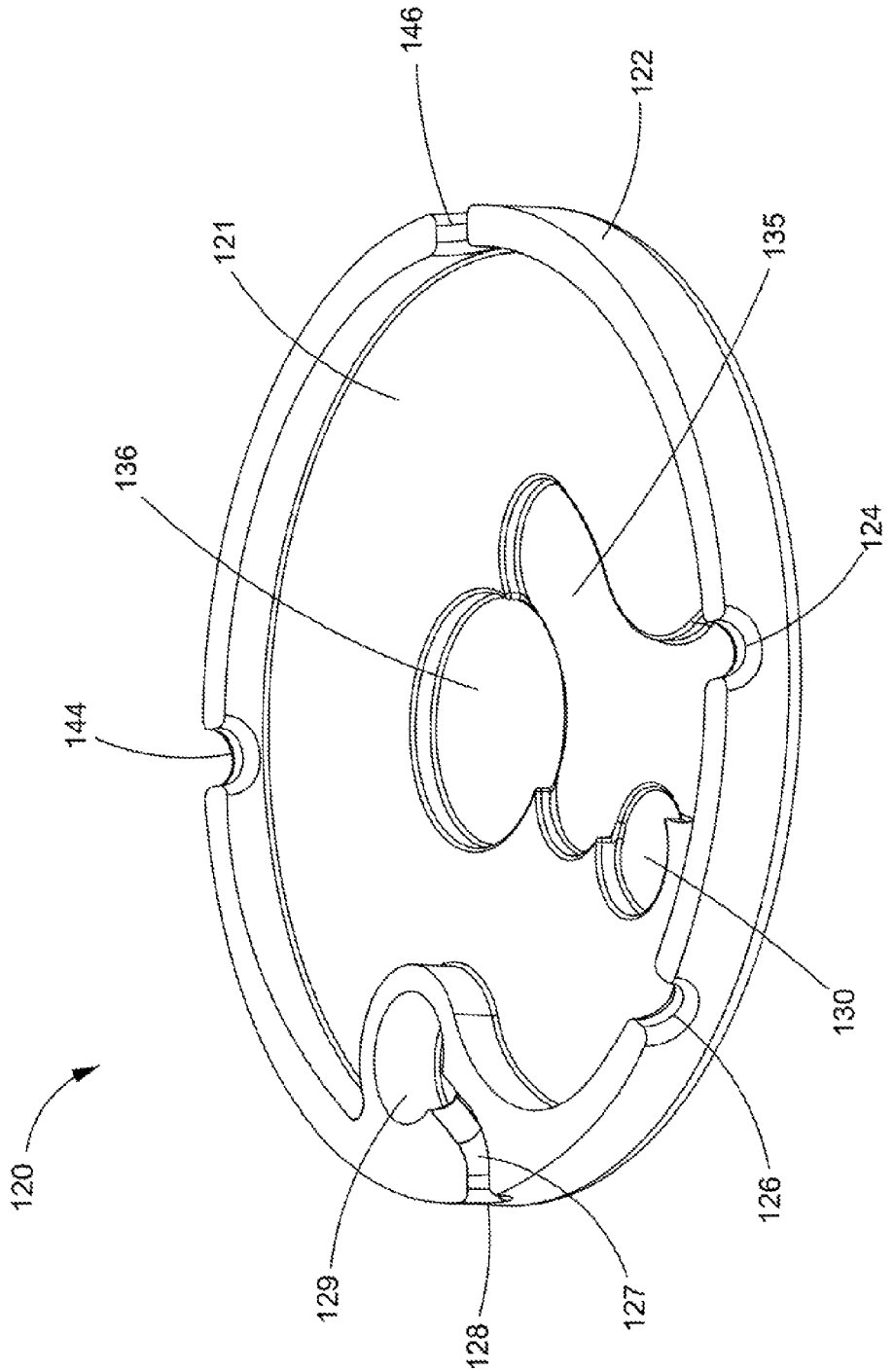



FIG. 6A

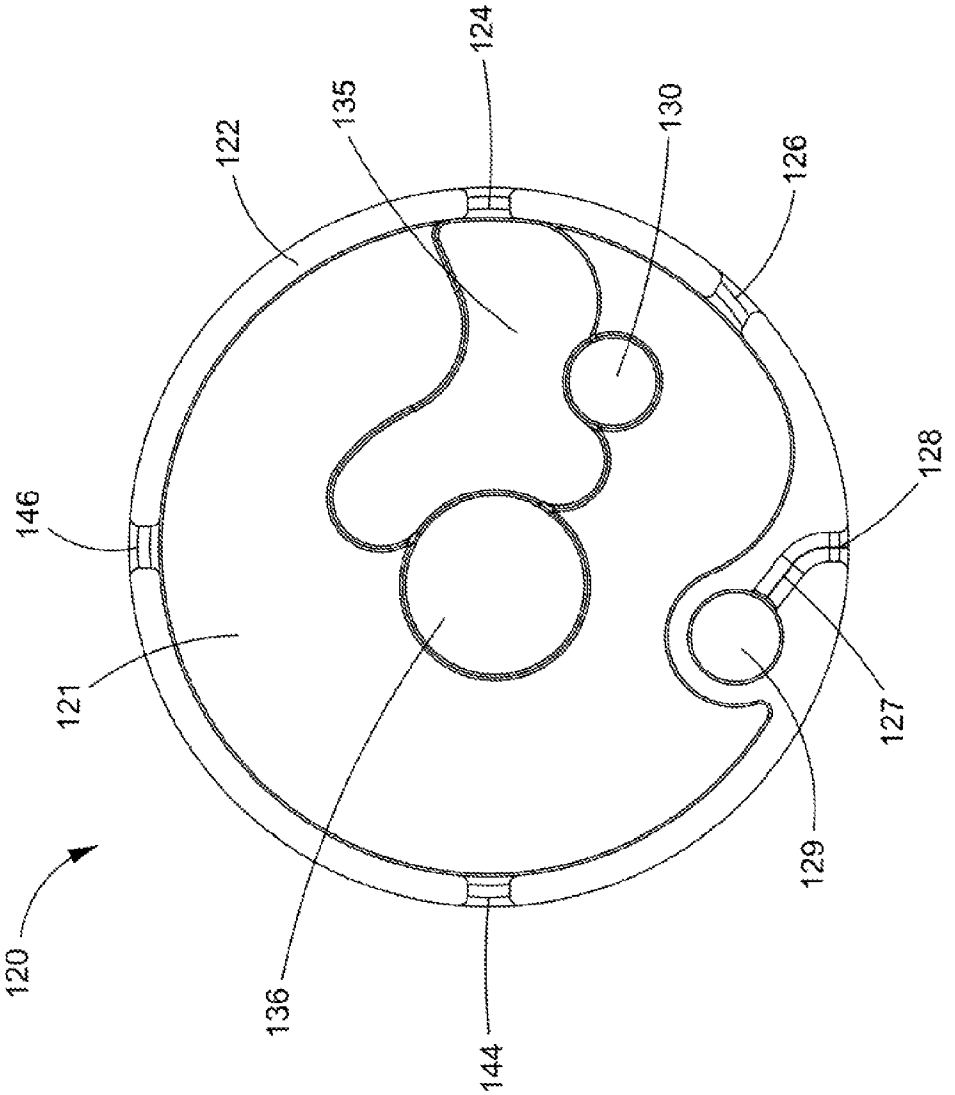



FIG. 6B

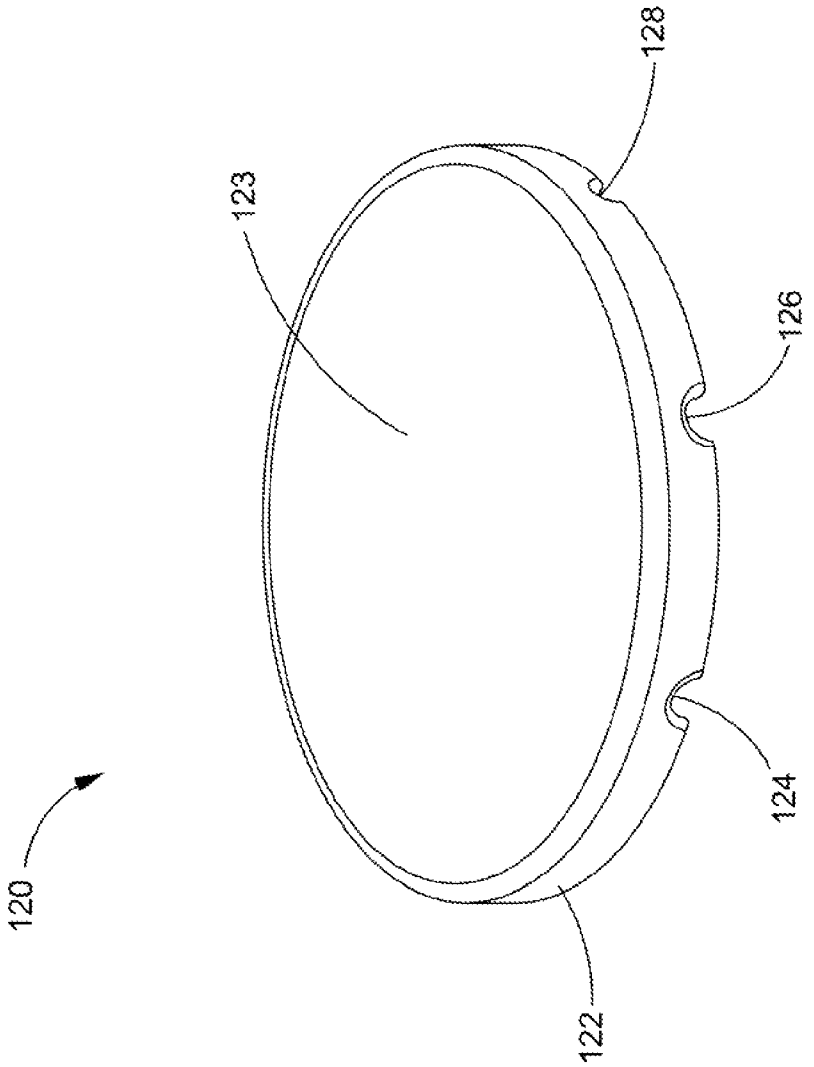



FIG. 7

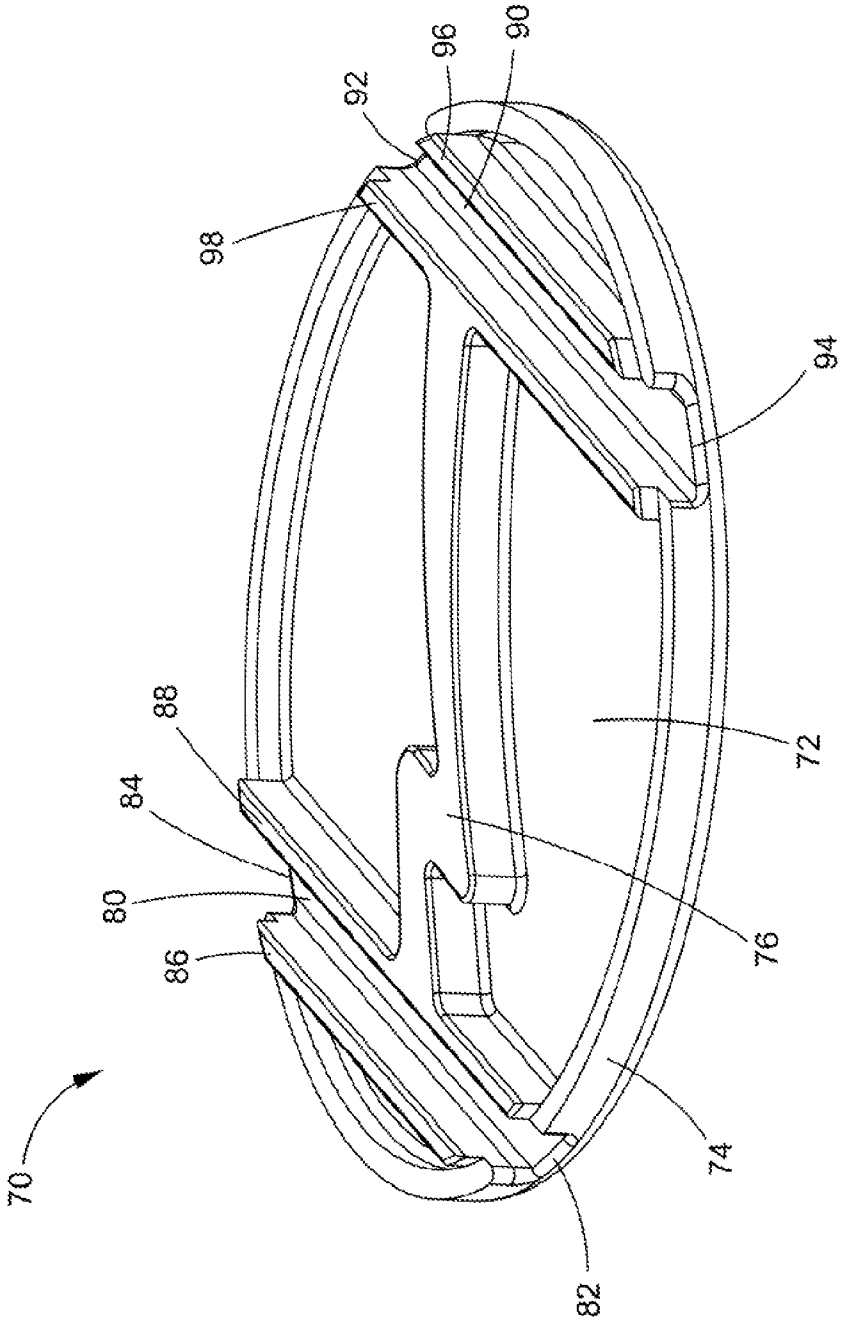



FIG. 8A

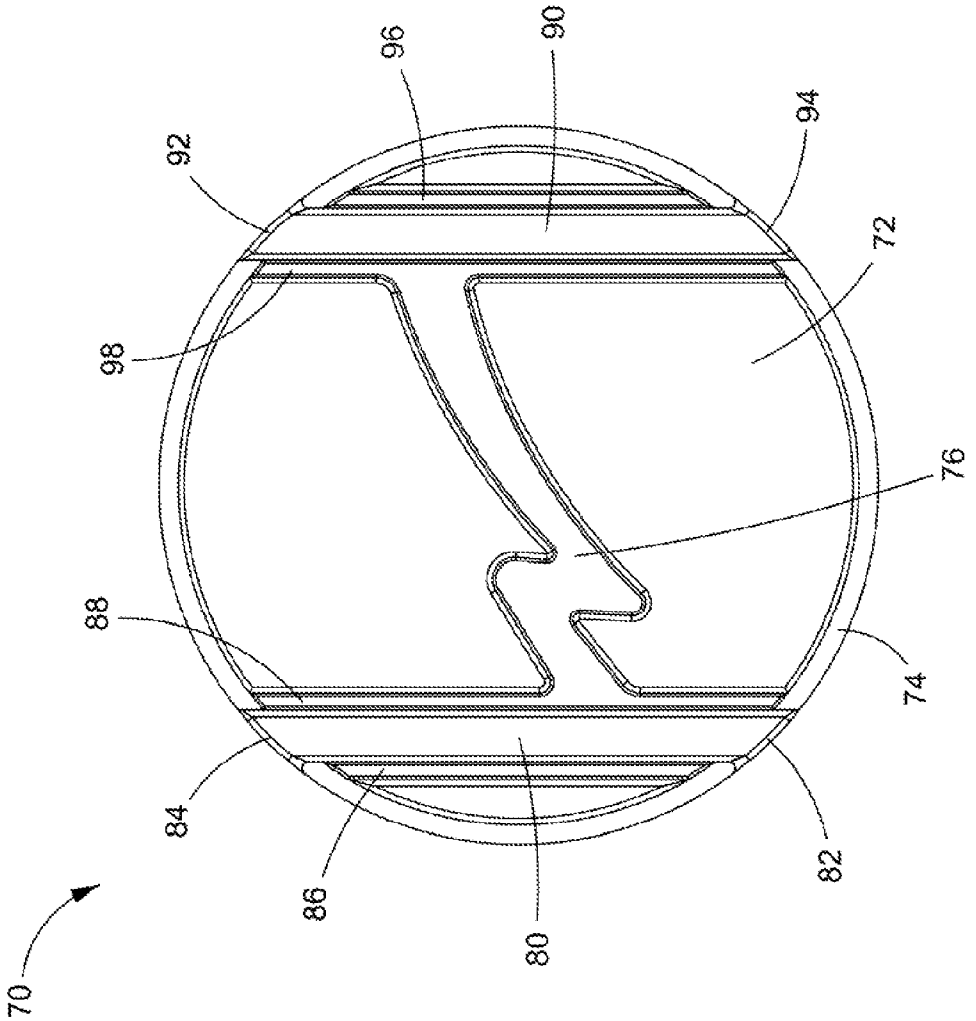



FIG. 8B

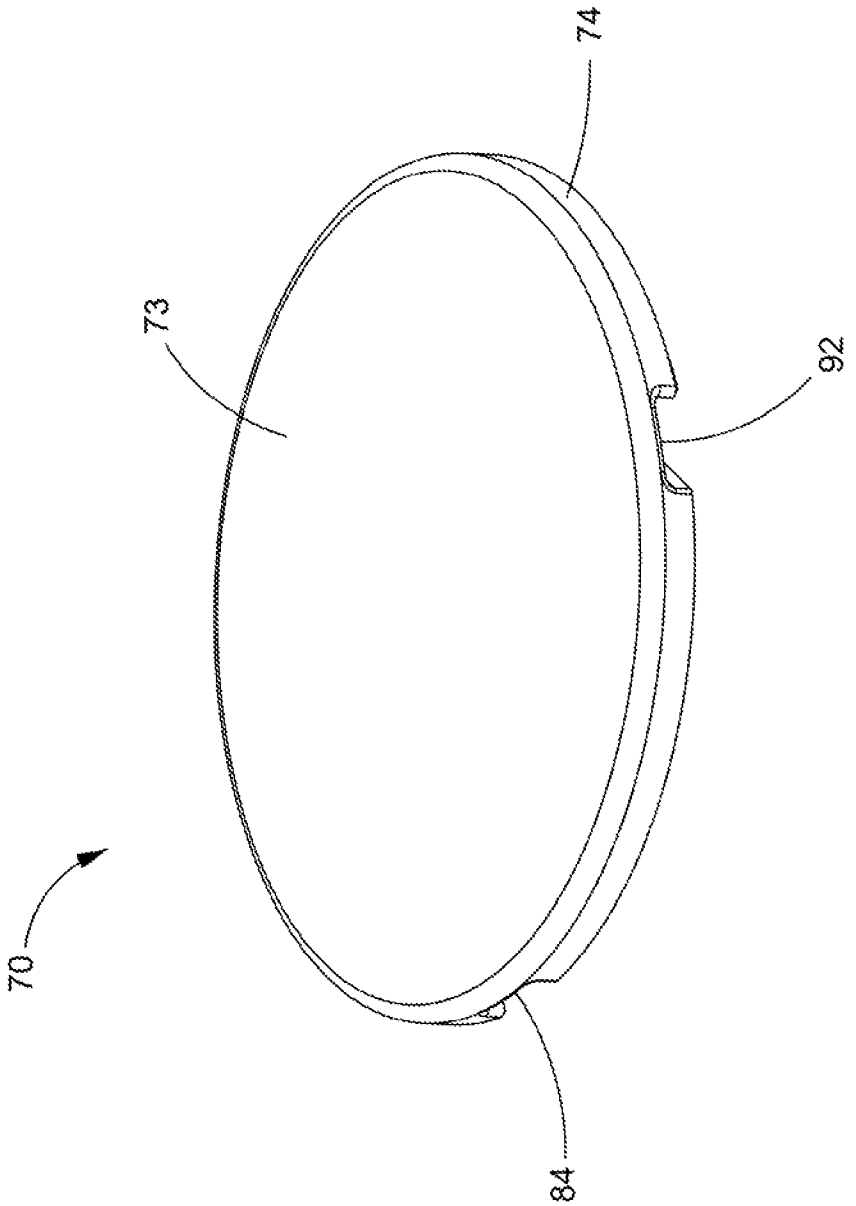



FIG. 9

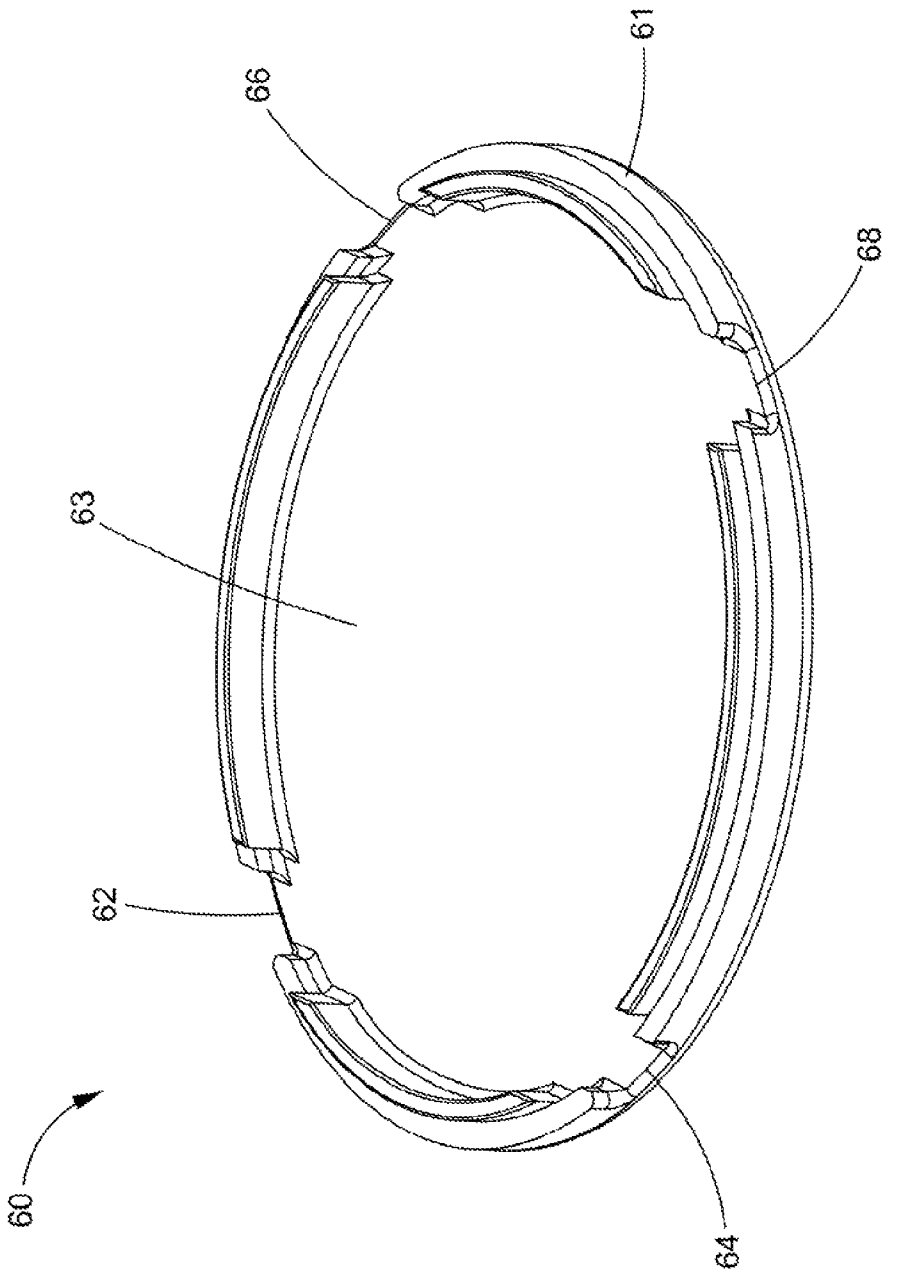



FIG. 10

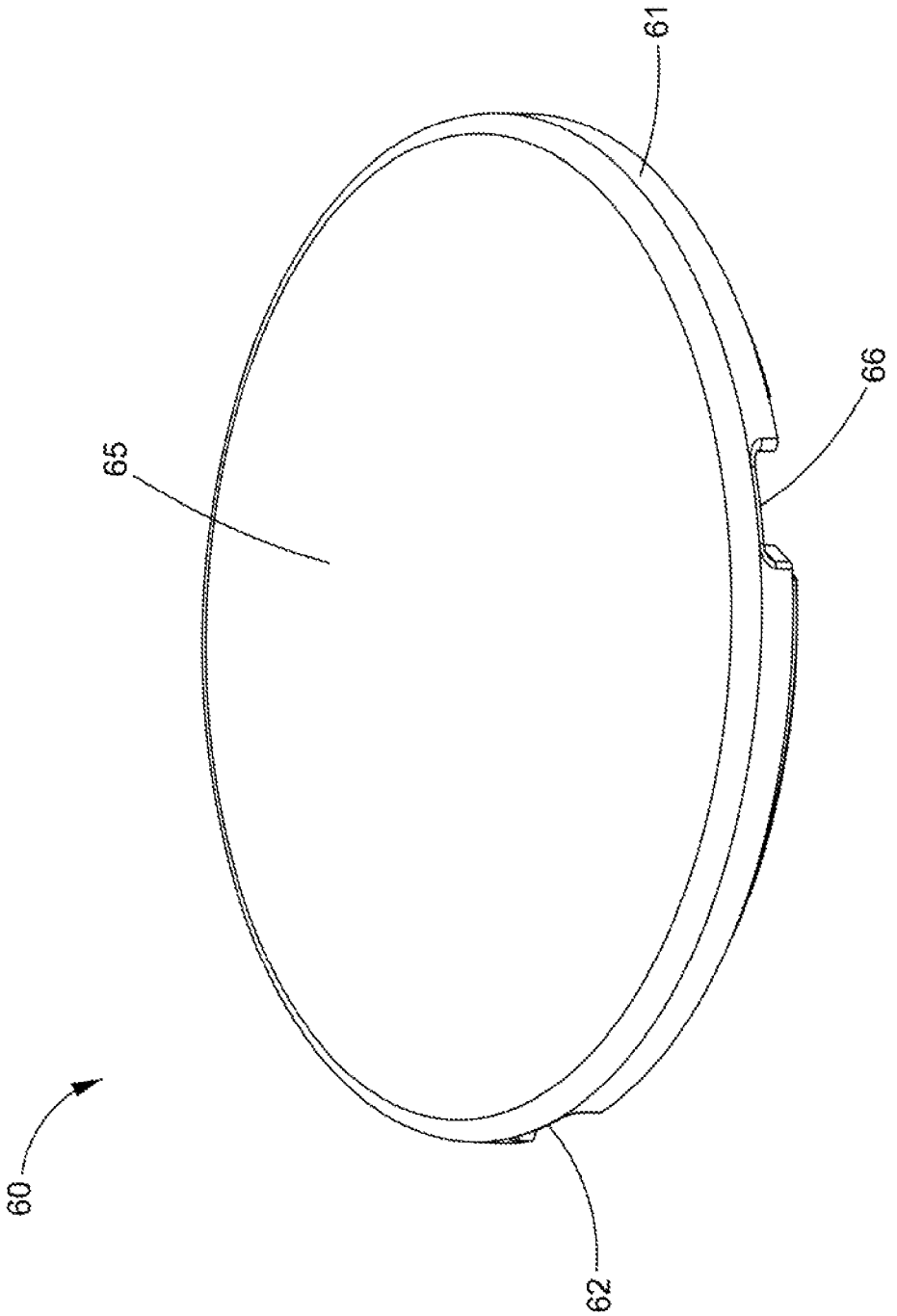
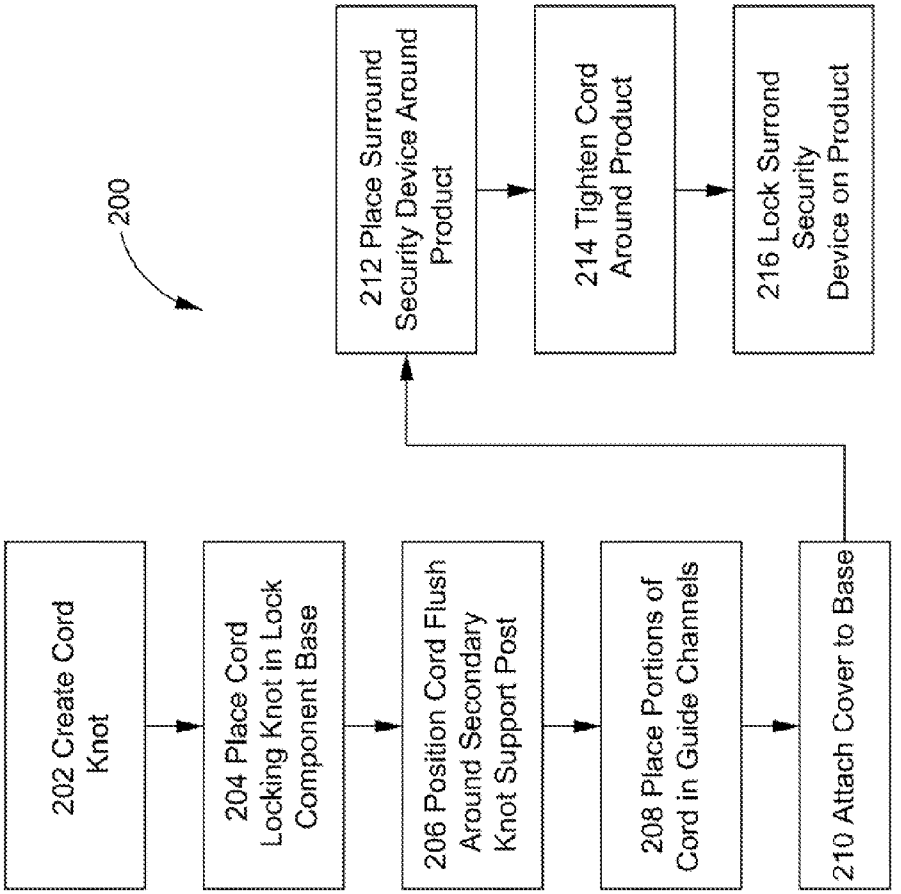



FIG. 11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202 Create Cord Knot
204 Place Cord Locking Knot in Lock Component Base
206 Position Cord Flush Around Secondary Knot Support Post
208 Place Portions of Cord in Guide Channels
210 Attach Cover to Base
212 Place Surround Security Device Around Product
214 Tighten Cord Around Product
216 Lock Surrond Security Device on Product

FIG. 12

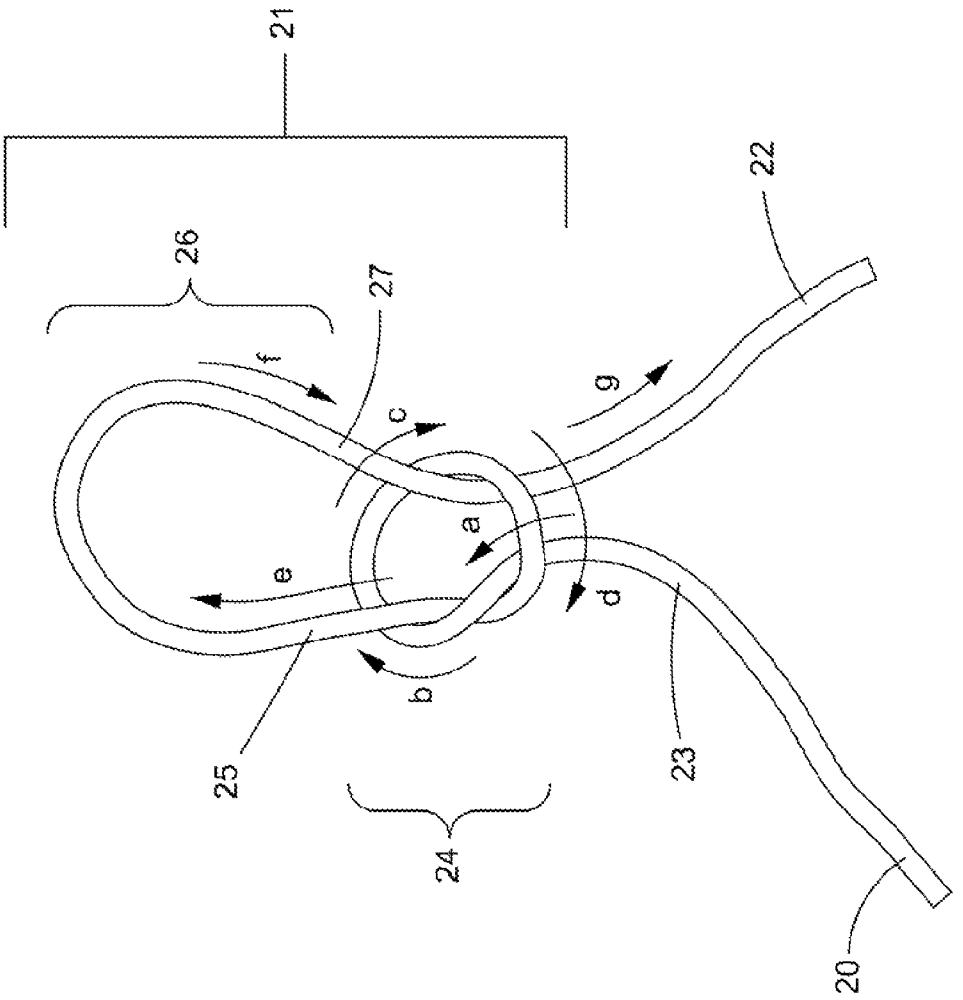
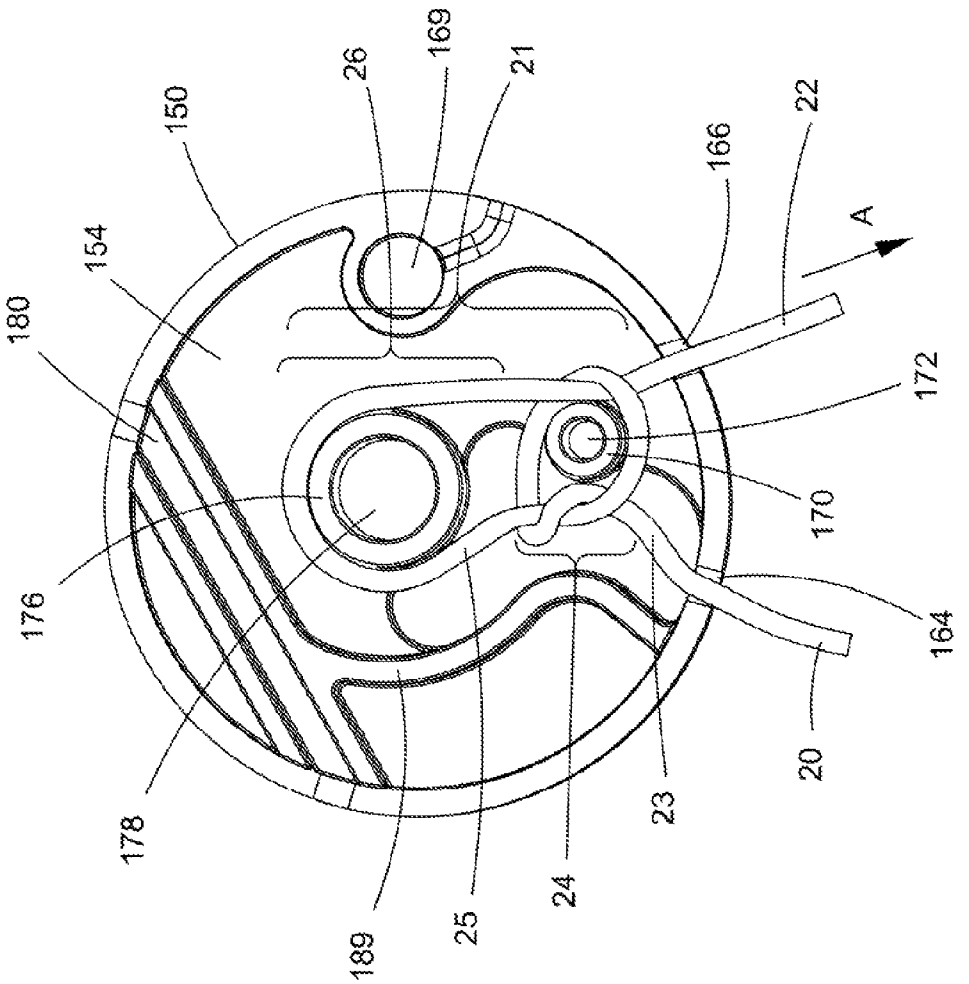



FIG. 13

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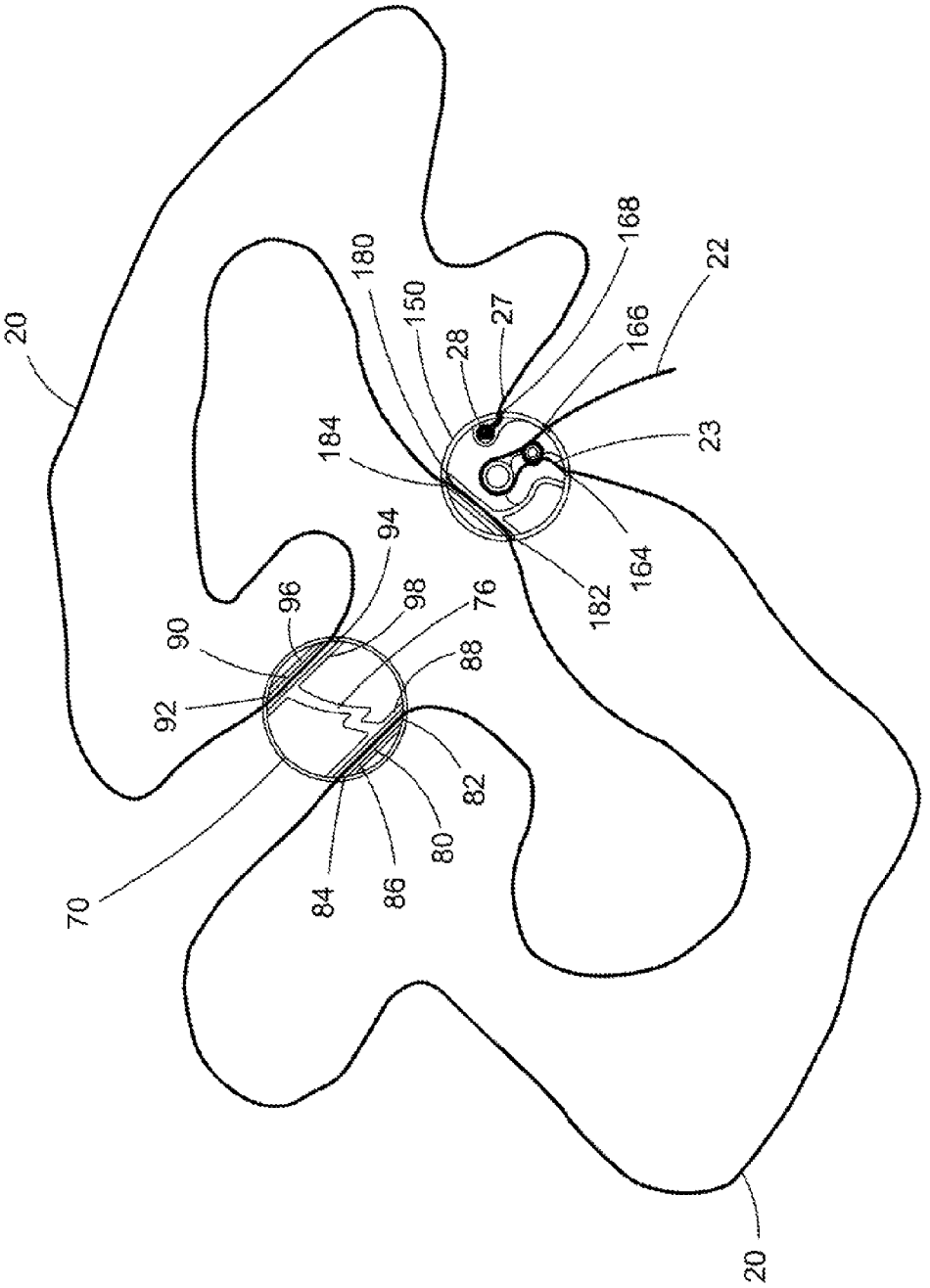
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FIG. 15

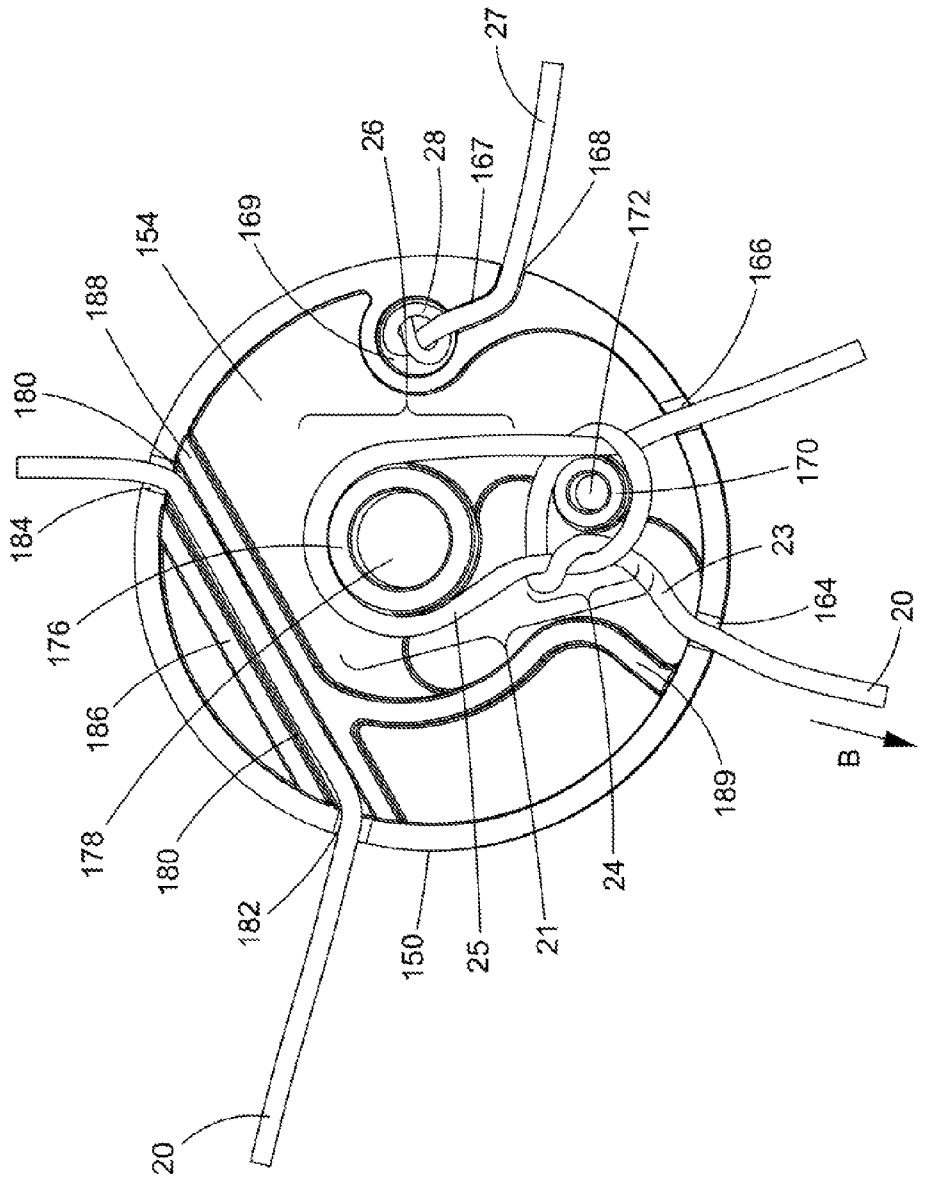
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FIG. 16

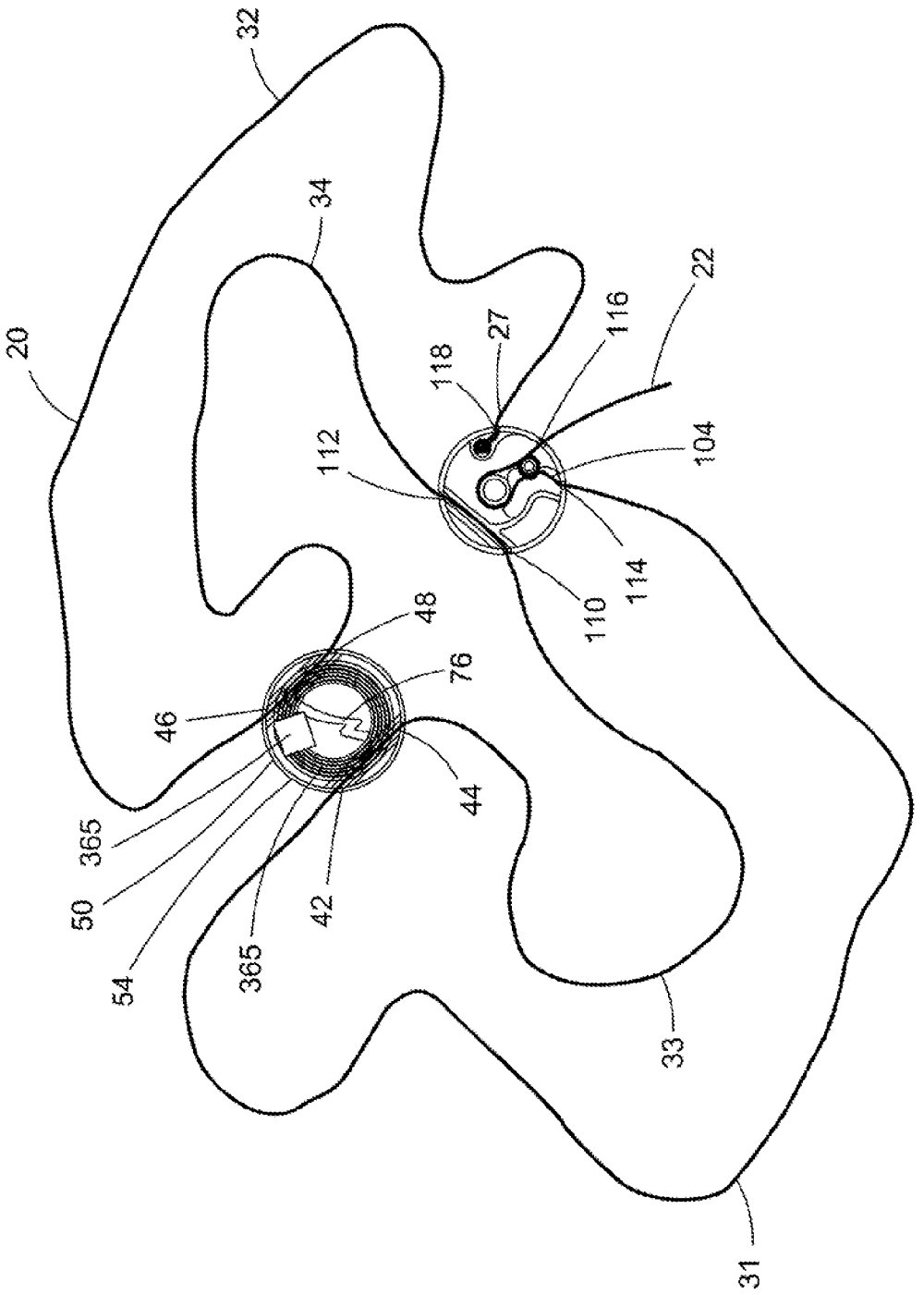
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FIG. 17

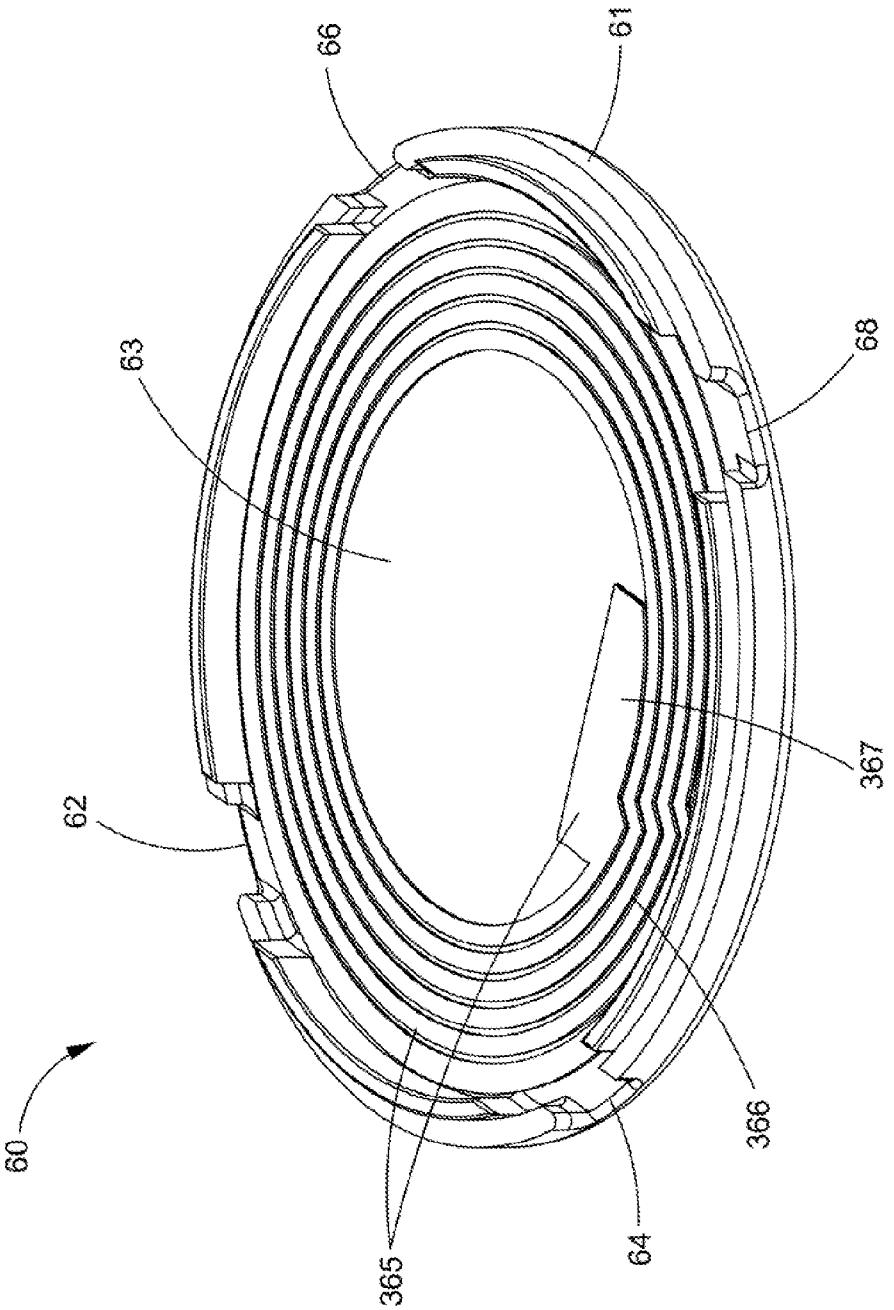


FIG. 18

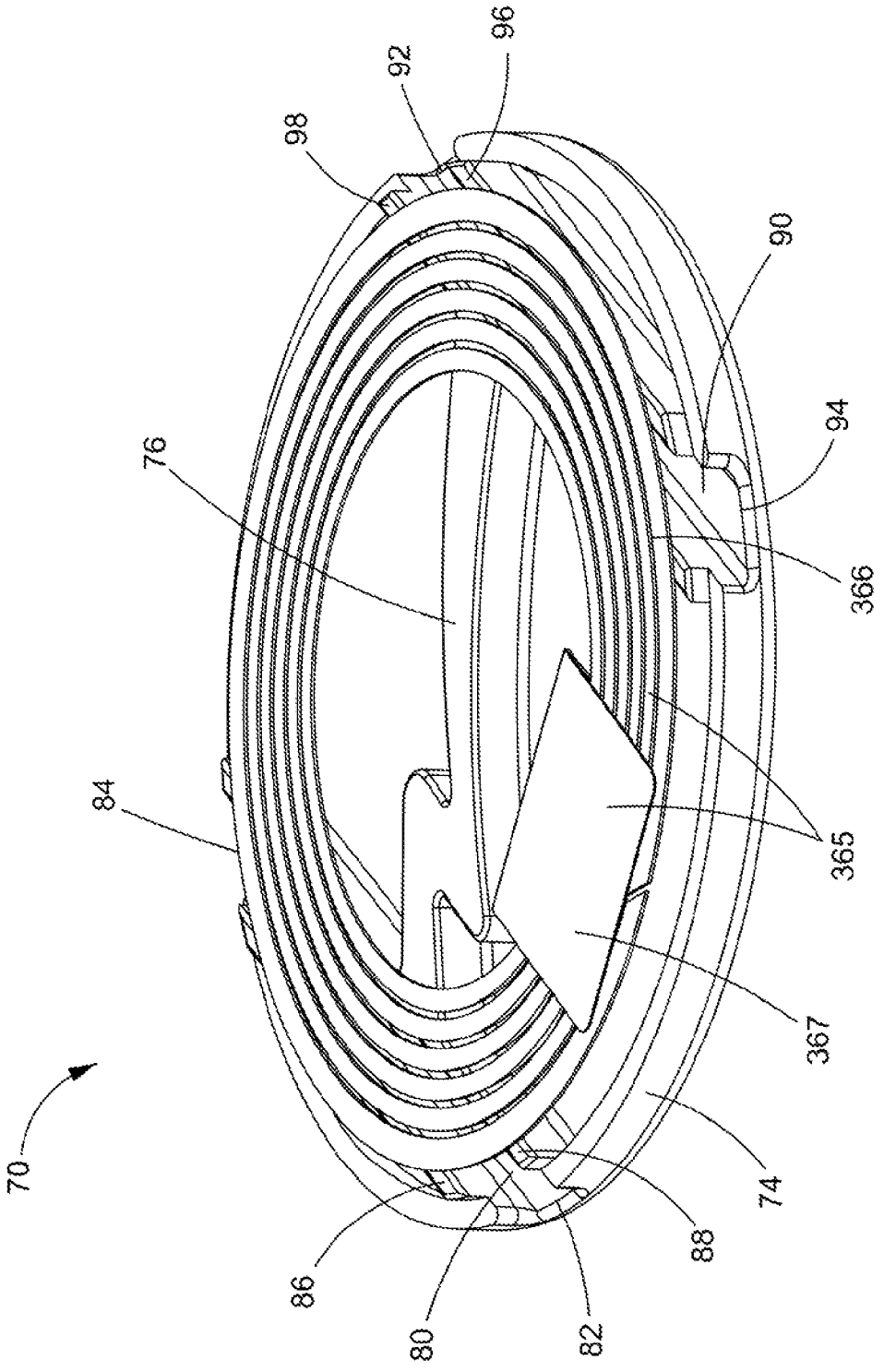


FIG. 19

# SECURITY SURROUND DEVICE WITH CORD LOCK

## CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit under 35 U.S.C. §119 (e) of the earlier filing date of U.S. Provisional Application Ser. No. 61/583,294 filed on Jan. 5, 2012, the entire disclosure of which is hereby incorporated by reference herein as if being set forth in its entirety.

## BACKGROUND

The present disclosure relates to a security device and method to surround merchandise with a cord having a knot, housed within a lock component. The cord may be lengthened and shortened from about the knot in the lock component so as to appropriately surround the merchandise and then locked from about the knot in the lock component.

Retail stores face the problem of providing potential consumers with opportunity to pick-up and handle various forms of merchandise packaging at a cost that the merchandise packaging may be broken into and the particular merchandise within stolen. Often, retailers display particular merchandise behind glass casing, with access only provided to the consumer after a store employee unlocks the casing and removes the merchandise on behalf of the customer. Other merchandise, particularly high-end merchandise, are often fitted with anti-theft security devices having mechanical and/or electrical lock and cable to wrap merchandise in a closed condition. These wrap locking devices allow for a customer to pick up and inspect the packaging of the merchandise. However, these wrap locking devices often include numerous mechanical components to lock the device on or around the merchandise and necessitate a store employee to eventually unlock and remove the device.

For example, a particular security device, shown in U.S. Pat. No. 5,794,464, includes a locking member, ratchet member, and plurality of cables. The ratchet member includes a gear and bearing to form a reel of which the cables are wound and unwound. The security device is tightened around a package by rotating the gear and bearing with an external tool. The tool operates the latch mechanism, both for tightening the cable about the object to be protected and to release the latch mechanism after the security component has been removed from the package, to enable the internal mechanism on which the cable is wound to be free-wheeling in order to be pulled outwardly to a larger size for placement around another package.

As shown in U.S. Pat. No. 6,092,401, another security device includes a strap, housing with a locking mechanism, cables, and crossover connector. The cables extending through the crossover connector and are affixed to a package as the strap is inserted into the housing, with the cables connected to both the strap and housing. Locking fingers in the housing engage teeth along the strap as the strap is slid in. A key is required to deflect the locking fingers out of locking engagement and away from the teeth of the strap to release the security device from the package.

As shown in U.S. Pat. No. 7,481,086, another security device includes a ratchet mechanism, locking member, and plurality of cables. Cables extend through a fastener and base of the locking member. The fastener is releasably snap-fitted into the base and secured by magnetically attractable tine. The ratchet mechanism includes spool and locking pawl. The housing of the ratchet mechanism includes a rotatable central portion key receiving recess to unlock the spool from the pawl. A rotatable top wall portion of the housing has a flip-up handle to rotate the top wall portion and the internal ratchet to tighten the cable to an article. A key is required to engage with the locking member to place the locking mechanism in a cable loosening direction so as to remove the security device from an article.



Due to the design in these devices, incorporating often numerous components to lock and/or ratchet cable around merchandise, the components themselves are often costly to manufacture. This in turn results in limited purchase orders by a retailer. Thus, the retailer is limited from applying these types of security devices to as many merchandise as they desire. Also due to cost, these devices are recycled. To recycle usage of the devices, the devices often require a key, as exemplified above, possessed by a store employee such as a cashier or manager, to remove the device from merchandise at or before checkout. Store employee interjection to remove the device from merchandise often slows down the checkout process. Due to the limited supply of these devices in a store because of cost and to prevent an elongated checkout for a customer, the devices are typically only placed on few high-end merchandise.

What is needed is a device and method to surround merchandise that can protect a product for one time use, which is disposable and does not require retailer intervention to remove the device. The disposable security device would be more cost effective to manufacture and may be applied to a larger number of store items. A disposable security device that can be thrown out by the consumer at home would decrease the waiting time for consumers at check-out.

## SUMMARY

Embodiments of this disclosure provide a security device and method to surround merchandise with cord having a knot, enclosed by a housing, which may be adjusted about the knot to in the merchandise and then locked with the not to hold the cord around, the product.

Embodiments of this disclosure are directed to a security device for a product including a lock housing and a cord. The cord includes a knot configured to allow the length of the cord to constrict about the product and to allow the cord to be locked at the constricted length about the product. The knot is positioned within the lock housing. The lock housing, and part of the cord, located external of the lock, housing, surrounds at least a portion of the product.

According to one embodiment, the cord further includes a head end secured about the lock housing. The cord also includes a tail end opposite the head end on the cord. The cord also includes a knot adjacent cord portion located approximate to the knot on the opposite side of the knot from the tail end. The part of the cord, located external of the lock housing, is between the head end and the knot adjacent cord portion.

According to another embodiment, the lock, housing includes a first support post positioned within the lock housing. The lock housing also includes a second support post positioned within the lock housing. The lock housing also includes a first outlet located about a periphery of the lock housing. The lock housing also includes a second outlet located about a periphery of the lock housing in proximity to the first outlet.

According to one aspect of one embodiment, the first support post is positioned approximately between the second support post, the first outlet, and the second outlet.

According to another aspect of one embodiment, the knot adjacent cord portion is located through the first outlet and the tail end is located through the second outlet.

According to another embodiment, the knot includes a first mop positioned around the first support post and a second loop positioned around the second support post and through the first loop. The cord length constricts between the head end and the knot adjacent cord portion when the tail end is pulled away externally from the second outlet of the housing to move the cord around the first support post in the first loop and around the second support post in the second loop. The first loop constricts around the second loop and the tail end at the first support post to restrict movement of the cord around the first loop and the second loop when the knot adjacent cord portion is pulled away externally from the first outlet of the housing to lock the constricted length of the cord about the product.

According to another embodiment, the security device includes one or more crossover housings. The one or more crossover housings include at least one guide channel positioned inside the crossover housing. The one or more crossover housings also include at least one pair of crossover openings. Each crossover opening of the pair of crossover openings is located about the periphery of the crossover housing. The crossover guide channel runs between each crossover opening. A section of the cord, external of the lock housing, is positioned in the crossover guide channel and through the pair of crossover openings.

According to one aspect of one embodiment, at least one side of the crossover housing comprises an adhesive to fasten the crossover housing to the product.

According to another embodiment, the crossover housing also includes at least one crossover housing support wall, positioned within the crossover housing, to counter an external force on the crossover housing.

According to another embodiment, the crossover housing also includes a security element positioned within the crossover housing. The security element is selected from one of an EAS element or an RFID element.

According to one aspect of one embodiment, at least one side of the lock ho sing includes an adhesive to fasten the lock housing to the product.

According to another embodiment, the lock housing also includes at least one lock housing support wall, positioned within the lock housing, to counter external three on the lock housing.

According to another embodiment, the lock housing includes a lock housing guide channel positioned inside the lock housing and a pair of lock housing openings. Each lock housing opening of the pair of lock housing openings is located about the periphery of the lock housing. The lock housing guide channel runs between each lock housing opening. A section of the cord, between the knot adjacent cord portion and head end, is positioned in the lock housing guide channel and through the pair of lock housing openings.

According to another embodiment, the lock housing comprises a blade, attached in proximity to the second outlet, to cut away the tail end of the cord.

According to one aspect of one embodiment, material of the cord is selected from at least one of metal, plastic, cloth, rubber, wool, or silk.

According to another embodiment, the lock housing further comprises a security element positioned within the lock housing and wherein the security element is selected from one of an EAS element or an REID element.

Embodiments of this disclosure are directed to a method for securing a product. The method includes surrounding a portion of the product with a cord. The method also includes tightening to constrict the length of the cord around the product from a knot in the cord. The knot is located within a lock housing. The method also includes locking the length of the cord in place around the product from the knot in the cord.

According to one embodiment, tightening to constrict the length of the cord includes pulling a tail end of the cord away externally from a second outlet of the lock housing and from the knot to constrict the length of the cord between a head end of the cord and a knot adjacent cord portion of the cord, located through a first outlet. The first outlet and second outlet are located about a periphery of the lock housing. The head end is positioned in the housing. The knot adjacent cord portion is located approximate to the knot on the opposite side of the knot from the tail end.

According to one aspect of one embodiment, locking the length of the cord includes pulling the knot adjacent cord portion away externally from the first outlet to constrict a first loop of the knot around a second loop of the knot and the tail end at a first support post in the lock housing. The lock housing includes a base haying the first support post and a second support post positioned within and a cover. The first support post is positioned approximately between the second support post, the first outlet, and the second outlet.

According to another embodiment, the method also includes forming the knot in the cord and positioning the knot into the base of the lock housing, prior to tightening to constrict the length of the cord.

According to one aspect of one embodiment, forming the knot includes forming the first loop in the knot with the tail end of the cord and the cord. Forming the knot also includes forming the second loop in the knot with the tail end between the tail end and the first loop. Forming the knot also includes passing the tail end about the second loop through the formed first loop.

According to another aspect of one embodiment, positioning, the knot into the base of the lock housing includes positioning the formed first loop around the first support post in the base. Positioning the knot also includes positioning the formed second loop around the second support post in the base. Positioning the knot also includes positioning the knot adjacent cord portion of the cord into the first outlet. Positioning the knot also includes positioning the tail end of the cord into the second outlet. According to another aspect of one embodiment, the method includes placing the bead end of the cord into the base portion.

According to another embodiment, the method includes attaching the cover to the base prior to surrounding the portion of the product.

According to another embodiment, positioning a security element into the lock housing prior to attaching the cover to the base, wherein the security element is selected from one of an EAS element or an RFID element.

According to another embodiment, the method also includes positioning a section of the cord, external of the lock housing, in one or more crossover guide channels and through one or more pair of crossover openings. The one or more crossover guide channels are located inside one or more crossover bases and the one or more pair of crossover openings are located about the periphery of the crossover base. The crossover guide channel runs between each crossover opening in the pair of crossover openings. The method also includes attaching a crossover cover to the crossover base to form a crossover housing, to enclose the section of cord.

According to another embodiment, the method includes fastening the one or more crossover housings to the product with adhesive.

According to another embodiment, the method includes positioning a security element into the crossover housing prior to attaching the crossover cover to the crossover base, wherein the security element is selected from one of an EAS element or an RFID element.

According to another embodiment, the method includes fastening the lock housing to the product with adhesive.

According to another embodiment, the method includes positioning to section of the cord, between the knot adjacent cord portion and the head end, into a lock housing guide channel and through a pair of lock housing openings prior to tightening the cord around the product. The lock housing guide channel is located inside the base and the lock housing openings are located about the periphery of the base. The lock housing guide channel runs between each lock, housing opening in the pair of lock housing openings.

According to another embodiment, the method includes cutting the tail end of the cord by a blade attached in proximity to the second outlet of the lock housing after tightening the cord around the product.

According to one aspect of one embodiment, cutting the tail end of the cord includes forcing the cover down onto the base about the second outlet to move the blade through the cord.

According to another aspect of one embodiment, the method also includes welding the attached cover to the base about a seam about a periphery of the lock housing.

Additional features and advantages of this disclosure will be made apparent from the following detailed description of illustrative embodiments that proceeds with reference to the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other aspects of this disclosure are best understood from the following detailed description when read in connection with the accompanying drawings. For the purpose of illustrating this disclosure, there is shown in the drawings embodiments that are presently preferred, it being understood, however, that this disclosure is not limited to the specific instrumentalities disclosed. Included in the drawings are the following Figures:

FIG. **1** illustrates a surround security device which includes crossover component, lock component, and cord according to one embodiment;

FIG. **2** illustrates a perspective view of the surround security device attached to an exemplary merchandising product according to one embodiment;

FIG. **3** illustrates the crossover component and lock component of the surround security device of FIG. **1** without the cord;

FIG. **4**A illustrates a perspective view of the lock, component base of lock component according to one embodiment;

FIG. **4**B illustrates a top-down view of the lock component base of FIG. **4**A according to one embodiment;

FIG. **5** illustrates a perspective view of the reverse side of the lock component base according to one embodiment;

FIG. **6**A illustrates a perspective view of the lock component cover of lock component according to one embodiment;

FIG. **6**B illustrates a top-down view of the lock component cover of FIG. **6**A according to one embodiment;

FIG. **7** illustrates a perspective view of the reverse side of the lock component cover according to one embodiment;

FIG. **8**A illustrates a perspective view of the crossover component base of crossover component according to one embodiment;

FIG. **8**B illustrates a top-down view of the crossover component base of FIG. **8**A according to one embodiment;

FIG. **9** illustrates a perspective view of the reverse side of the crossover component base according to one embodiment;

FIG. **10** illustrates a perspective view of the crossover component cover of crossover component according to one embodiment;

FIG. **11** illustrates a perspective view of the reverse side of the crossover component cover according to one embodiment;

FIG. **12** illustrates a process for creating the surround security device and applying the device on a product according to one embodiment;

FIG. **13** illustrates a formed cord knot from the cord according, to one embodiment;

FIG. **14** illustrates the cord knot positioned inside the lock component base according to one embodiment;

FIG. **15** illustrates cord located in the guide channels of both the crossover component base and lock component base according to one embodiment;

FIG. **16** illustrates cord knot as locked within the lock component according to one embodiment;

FIG. **17** illustrates the surround security device with the crossover component and the lock component connected via cord according to one embodiment;

FIG. **18** illustrates an EAS element located inside crossover component cover according to one embodiment; and

FIG. **19** illustrates an EAS element located about the crossover component base according to one embodiment.

## DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

This document describes a device and method to surround and secure merchandise for theft deterrence and/or detection using a cord with at least one housing unit, which may surround and lock the surround security device to the merchandise.

FIG. **1** illustrates a surround security device **10** which includes crossover component **50**, lock component **100**, and cord **20**. Crossover component housing **54** is the external surface encasement of crossover component **50**. Lock component housing **104** is the external surface encasement of lock component **100**. As shown in FIG. **1**, both the crossover component housing **54** and lock component housing **104** are spherical shaped, like a disk. Also as shown in FIG. **1**, the edge about the periphery of each housing, or periphery wall, includes openings.

A single cord **20** extends through and between both the crossover component **50** and lock component **100**. As shown in FIG. **1**, particular sections of cord **20** are exposed outside of both the crossover component **50** and lock component **100**, shown extending between the crossover component **50** and lock component **100**. A first cord section **31** is shown extending from first crossover cord guide channel opening **42**, located about the periphery wall of the crossover component housing **54**, to the cord access way **114**, located about the periphery wall of the lock component housing **104**. Second chord section **32** is shown extending from fourth crossover cord guide channel opening **46**, located about the periphery wall of the crossover component housing **54**, to the portal **118** located about periphery wall of the lock component housing **104**. A third cord section **33** is shown extending from second crossover cord guide channel opening **44** (see FIG. **17**), located about the periphery wall of the crossover component housing **54**, to the first cord guide channel opening **110** (see FIG. **17**), located about the periphery wall of the lock com-

ponent housing **104**. A fourth cord section **34** is shown extending from third crossover cord guide channel opening **48** (see FIG. **171**, located about the periphery wall of the crossover component housing **54**, to the second cord guide channel opening **112** (see FIG. **17**), located about the periphery wall of the lock component housing **104**. A cord tail **22**, which is one end of cord **2**(, is also shown external of the lock component housing **104** as extending from outside cord tail access way **116**, located about the periphery wall, of the lock component housing **104**. Location of cord **20** within both the crossover component housing **54** and lock component housing **104** is further described below.

FIG. **2** illustrates a perspective view of the surround security device **10**, shown in FIG. **1**, attached to an exemplary merchandising product **5**. The crossover component **50** is shown located on the topside of the rectangular shaped product **5**, nearer to foreground in FIG. **2**. The product **5** is shown as transparent so as to show the surround security device **10** fitted around the product **5**. The lock component **100** is shown on the opposing side of the product **5**, visible on the bottom side, in the background. As shown, the surround security device **10** securely surrounds the product **5** about all six sides of the product **5**. The surround security device **10** is shown in a locked configuration, such that the cord **20** has been locked within the lock component **100** such that a sufficient tension exists on the cord **20** about the product **5** so that cord **20** may not be simply slipped off or torn off by a potential thief. First cord section **31** and second cord section **32** are shown as approximately equal in length, each stretched from the crossover component **50** to the lock component **100**. Third cord section **33** and fourth cord section **34** are shown as equal in length. Depending on the position of either the crossover component **541** and/or lock component **100**, the length of either section may differ from the length of another section.

Product **5**, shown in FIG. **2**, is rectangular in shape. However, products come in variable sizes and shapes. The surround security device **10** can be configured to a fit around products of variable sizes and shapes. Cord **20** may be of various lengths and widths. Cord **20** may be of length and width to extend around and ultimately secure larger merchandise products such as trash cans, cooking grills, and boxed shelving. Cord **20** may be smaller in length and smaller in width so as to secure around smaller products such as battery packs or cold medication. The cord **20** can conform to wrap around various product shapes, as for example but not limited to cylinder shaped products, such as baby formula containers; spherical shaped products, such as howling balls; and any other diversely shaped product. Products having various shapes and contortions may require that any one or more cord sections be different in length than other cord sections for proper fitting around the product to sufficiently tighten around the product of a particular shape.

The crossover component **50** and locking component **100** shown in FIG. **1** are spherical. As shown in FIG. **1**, the diameter of the crossover component housing **54** is approximately 45 mm and the height is approximately 6 mm. The diameter of the lock component housing **104** is 31 mm and the height is 6 mm. In other embodiments, the crossover component **50** and/or locking component **100** may be of various shapes and sizes to optimize security of a particular product. In other embodiments, the diameter or height of the crossover component **50** and lock component **100** may be the same or different. The crossover component housing **54** and/or lock component housing **104** may have a larger diameter to fit on a larger product or to provide more visibility to customers that the surround security device **10** is affixed to a particular product. Smaller diameter housing may be constructed to properly fit on smaller products, so as not to block out portions of product packaging, or to lessen visibility to customers that a particular product has a security component attached. In other embodiments, the crossover component housing **54** may be of similar or different shape than the lock component housing **100** shape. For example, the shape of either or both housings may be, but not limited to, a cylindrical, rectangular, square, or triangular shape. In other embodiments, the housings may be designed to a particular shape so as to properly fit on or about a particular product. In other embodiments, either or both housings or portions of the housings may be transparent or opaque. For example, a transparent housing may be used to show potential consumers that an EAS element is located within (see FIGS. **17**, **18**, and **19**).

FIG. **3** illustrates the crossover component **50** and lock component **100** of the surround security device **10** of FIG. **1** without showing cord **20**. The crossover component housing **54** includes two pieces, a crossover component cover **60** and crossover component base **70** connected to each other at the crossover component housing seam **52** around the periphery wall of the crossover component housing **54**. The lock component housing **104** includes two pieces, a lock component cover **120** and lock component base **150** connected to each other at the lock, component housing seam **102** around the periphery wall of the lock component housing **104**. The two pieces of the crossover component **50** and lock component **100** may be tightened or pressed together for connection. Preferably, the two pieces may also be ultra-sonic weld together. Alternatively, adhesive may be applied to portions of either or both bases or covers to keep the pieces together.

As further shown in FIG. **4**A through **11**, the two pieces of the lock component housing **104** and crossover component housing **54** are solid structures formed from mold. In the preferred embodiment, the pieces do not include mechanically connected components. The pieces may be formed from numerous materials, including but not limited to plastics; wood, carbon fiber rubber, and/or metal. In other embodiments, a housing may be formed with flexible rubber such that the housing can bend to better fit on a product, as for example on a round product. Some pieces may be formed with the same material; where as other pieces may be formed with different material. For example, the lock component base **150** may be formed with plastic and the lock component cover **120** may be formed with metal. In other embodiments, parts within either base or cover can be thrilled from material different than material used with other parts in the same base or cover. In the preferred embodiment, both pieces of the lock component housing **104** and crossover component housing **54** are formed with plastic.

FIG. **4**A illustrates a perspective view of the lock component base **150** of lock component **100**. FIG. **4**B illustrates a top-down view of the lock component base **150** shown in FIG. **4**A. The lock, component base **150** includes an internal side base floor **154**. The opposite side of the internal side base floor **154** is the external side base floor **152** (see FIG. **5**). Base periphery wall **160** surrounds the circumference of the internal side base floor **154** and extends above and perpendicular to the surface of the internal side base floor **154**. Three half-circle notches are located on the base periphery wall **160** about the top edge of the base periphery wall **160**, the top edge being furthest from connection with the internal, side base floor **154**. As shown in the foreground of the lock component base **150** perspective view of FIG. **4**A, the left half-circle notch shown is the base side cord access way **164**. The right half circle notch shown is the base side portal **168**. The center half-circle notch, between the base side cord access way **164** and has side portal **168**, is the base side cord tail access way

166. In other embodiments, these notches may be other shapes, as for example rectangle, so that a portion of cord **20** may reside.

Lock component base **150** includes base side depression **169** which is located adjacent to base periphery wall **160**. In the preferred embodiment, the base side depression **169** is spherical in shape. The base side depression **169** is enclosed by the internal side base floor **154** at the bottom and almost entirely by walls extending in connection from the base periphery wall **160** around sides of the base side depression **169**. Base side tunnel **167** provides access to a side of the base side depression **169**. Base side tunnel **167** extends from the side of the base side depression **169** to base side portal **168**. In other embodiments, lock component base **150** may include a different shaped base side depression **169** that may be located elsewhere on lock component base **150**. For example, the base side depression **169**, with base side tunnel **167** and base side portal **168**, may be located between supplemental base support wall **189** and second base guide wall **188**. In other embodiments, base side depression **169**, with base side tunnel **167** and base side portal **168**, may not exist in the lock component base **150**. In other embodiments, only the base side portal **168** or base side tunnel **167**, with the base side portal **168**, may exist in the lock component base **150**.

Also shown in FIGS. **4**A and **4**B, internal side base floor **154** includes a base floor recess **155** having a lower surface height than the internal side base floor **154**. The reverse side of the base floor recess **155** is the external side base floor **152** (see FIG. **5**). The location of the base floor recess **155** in the preferred embodiment, and the difference in surface height of the base floor recess **155** from the surface height of the internal side base floor **154**, provides additional vacancy far primary loop **24** of cord knot **21** (see FIG. **14**), further described in reference to FIGS. **13** and **14**. In other embodiments, a base floor recess may not exist in the lock component base **150**. For example, a thinner cord **20** with a smaller cord knot **21** may not require a recess so as to fit within the lock component housing **104**. In other embodiments, the base floor recess may be located, elsewhere in the internal side base floor **154**, as for example entirely around the primary knot support post **170** and/or secondary knot support post **176** to provide additional room for the entire cord knot **21** (see FIG. **14**).

Also shown in FIGS. **4**A and **4**B, primary knot support post **170** extends above and perpendicular to the surface of the internal side base floor **154** and in proximity to base side cord tail access way **166**. In the preferred embodiment, primary knot support post **170** is cylindrical in shape. In the preferred embodiment, primary knot support post **170** is hollow having a primary knot support post cavity **172** located centrally within the primary knot support post **170** and extending the height of the cylinder to a closure at the base of the cylinder at the surface of the internal side base floor **154** inside the primary knot support post **170**, in the preferred embodiment, the diameter of the primary not support post **170** is approximately 3.5 mm and the diameter of the primary knot support post cavity **172** is 2 mm. In other embodiments, the cylinder may be hollow having two open ends; including an opening having cavity exposure from the external side base floor **152** (see FIG. **5**). ID other embodiments, the diameter of the primary knot support post cavity **172** may be larger or smaller. In other embodiments, a cavity may not exist in the primary knot support post **170**. In other embodiments, the diameter of the primary knot support post **170** may be larger or smaller. The primary knot support post **170** may be positioned in a direction closer to the secondary knot support post **176** or base periphery wall **160**. For example, larger width cord **20**, used in the lock component **100**, may necessitate that the primary and secondary knot support posts be positioned further from one another.

Secondary knot support post **176** is also shown in FIGS. **4**A and **4**B. In the preferred embodiment, secondary knot support post **176** is located approximately at center of the lock component base **150**. In other embodiments, the secondary knot support post **176** may located elsewhere in the lock component base **150**, so long as cord knot **21** may be placed about the primary knot support post **170** and secondary knot support post **176** within the lock component base **150**. In the preferred embodiment, secondary knot support post **176** is cylindrical in shape. In the preferred embodiment, secondary knot support post **176** is hollow having a secondary knot support post cavity **178** located centrally within the secondary knot support post **176** and extending the height of the cylinder, from the opening at the top of the cylinder to closure at the base of the cylinder at the surface of the internal side base floor **154** inside the secondary knot support post **176**. In the preferred embodiment, the diameter of the secondary knot support post **176** is approximately 7.5 mm and the diameter of the primary knot support post cavity **178** is 5 mm. In other embodiments, the cylinder may be hollow having two open ends, including and opening at the external side base floor **152** (see FIG. **5**). In other embodiments, the diameter of the secondary knot support post cavity **178** may be larger or smaller. In other embodiments, a cavity may not exist in the secondary knot support post **176**. In other embodiments, the diameter of the secondary knot support post **176** may be larger or smaller. The secondary knot support post **176** may be positioned in a direction closer to the primary knot support post **170** or base periphery wall **160**.

In the preferred embodiment, as shown in FIGS. **4**A and **4**B, the secondary knot support post **176** is larger in diameter than the primary knot support post **170**. The secondary knot support post cavity **178** is also larger in diameter than the primary knot support post cavity **172**. In other embodiments, the diameter of either support post or cavity, within a post, may be larger or smaller. The size, including the diameter, of the support post may vary based on the with of the cord **20**. The diameter of either cavity within the support posts may be enlarged or constricted based on the size of manufacturing tools used to construct the lock component **100**. For example, the primary knot support post cavity **172** and/or secondary support post cavity **178** can accept is peg or other instrument so as to hold the lock component **150** in place when cord **20**, including cord knot **21**, is positioned within, as further described in reference to FIGS. **12** through **17**. In the preferred embodiment, both support posts extend further in height than the base periphery wall **160** from the surface of the internal side base floor **154**. In other embodiments, each or both support posts may extend up from internal side base floor **154** at a height less than, greater than, or approximately equal to the height of the base periphery wall **160** from the internal side base floor **154**.

In other embodiments, the shape of either or both the primary knot support post **170** and/or secondary knot support post **176** may vary. The posts may be triangular, rectangular, or have more than four flats sides. The cylindrically shaped posts may have different diameters from the base to the top edge of the post along the height. For example, either or both the primary knot support post **170**, and/or secondary knot support post **176**, may have a smaller diameter near the base of the cylinder approximate to the connection with the internal side base floor **154** that near the top of the cylinder. This would allow cord **20** to fit around the circumference of the

post near the base, secured from sliding up along the height of the cylinder since the diameter is wider near the top.

As shown in FIGS. **4**A and **4**B, a first base guide wall **186** and second base guide wall **188** extend above and perpendicular to the surface of the internal side base floor **154**. Both guide walls extend further in height than the base periphery wall **160** from the surface of the internal side base floor **154**. In other embodiments, the height of the either or both guide walls may less than, greater than, or approximately equal to the height of the base periphery wall **160** from the internal side base floor **154**. Both guide walls connect at their respective ends to the base periphery wall **160**. The first base guide wall **186** and second base guide wall **188** are located parallel to each other providing for cord guide channel **180**, located between the two walls. The length of the cord guide channel **180** extends from a base side first cord guide channel opening **182** to a base side second cord guide channel opening **184**. Both channel openings are formed between the ends of the parallel guide walls at the connection with the base periphery wall **160**. Base side first cord guide channel opening **182** and base side second cord guide channel opening **184** are half-circle notches, similar in shape and size to the base side cord access way **164** and base side cord tail access way **166**, and located on the upper edge of the base periphery wall **160**.

In other embodiments, either one or both guide walls may not exist in the lock component base **150**. In other embodiments, more than two guide walls, along with additional cord guide channel openings, may be located within the lock device **100**. More than one cord guide channel may thus be provided inside the lock device **100** to run additional portions of cord **20** therethrough.

As shown in FIGS. **4**A and **4**B, a supplemental base support wall **189** connects to the second base guide wall **188** at one end and to the base periphery wall **160** at the other end and in proximity to the base side cord access way **164**. The height of the supplemental base support wall **189** is approximately equal to the height of the second base guide wall **188**. In other embodiments, the height of the supplemental base support wall **189** may be greater, equal to, or less than the height of the base periphery wall **160**. As shown in FIGS. **4**A and **4**B, the supplemental base support wall **189** is curved, unlike first base guide wall **186** and second base guide wall **188**. In other embodiments, the supplemental base support wall may be straight or have one more angles. In other embodiments, either or both of the first base guide wall **186** and second base guide wall **188** may be curved or have one or more angles. Curved first base guide wall **186** and second base guide wall **188** would provide for a curved cord guide channel **180**. Connection of the supplemental base support wall **189** with the base periphery wall **160** is located adjacent to the base side cord access way **164**, on a side of the base side cord access way **164**, but not on the side located between the base side cord access way **164** and the base side cord tail access way **166**, so as not to interfere with placement of the cord knot **21** (see FIG. **14**). The curved shape of the supplemental base support wall **189** serves as a guide for the placement of cord **20**, including cord knot **21** (see FIG. **13**), as further described in reference to FIGS. **12** through **17**. In other embodiments, the supplemental base support wall **189** may not exist in the lock device **100** or may be positioned elsewhere in the lock component base **150**. For example, as supplemental base support wall may be positioned from an external side of the base side depression **169** to run to the second base guide wall **188**, closer in proximity to the base side second cord guide channel opening **184**. In other embodiments, more than one supplemental base support wall may be positioned in the lock device **100**. The supplemental base support wall **189** may also serve to counter an external force applied to the lock component housing **104** to prevent the housing from snapping or breaking at the seam **102**.

FIG. **5** illustrates a perspective view of the reverse side of the lock component base **150**. The external side base floor **152** and external side of the base periphery wall **160** form the outer external surface of the lock component base **150** forming part of the lock component housing **104**. In the preferred embodiment, and as shown in FIG. **5**, the external side base floor **152** airfare is flat. In other embodiments, external surface may be rounded, dimpled, smooth, and/or rough.

FIG. **6**A illustrates a perspective view of the lock component cover **120** of lock component **100**. FIG. **6**B illustrates a top-down view of the lock component cover **120** shown in FIG. **6**A. The lock component cover **120** includes an internal side cover ceiling **121**. The reverse side of the internal side cover ceiling **121** is the external side cover ceiling **123** (see FIG. **7**). Cover periphery wall **122** surrounds the circumference of the internal side cover ceiling **121** extending above and perpendicular to the surface of the internal side cover ceiling **121**. Five half-circle notches a located on the cover periphery wall **122** about the top edge of the cover periphery wall **122**, wherein the top edge is furthest from connection with the internal side cover ceiling **121**. As shown in the foreground of the lock component cover **120** perspective view of FIG. **6**A, the furthest left half-circle notch shown is the cover side portal **128**. The half-circle notch shown centrally in the foreground view is the cover side cord access way **124**. The half-circle notch shown between the cover side portal **128** and the cover side cord access way **124** is the cover side cord tail access way **126**. The half-circle notch located on the opposite from the cover side portal **128**, on the cover periphery wall **122**, is the cover side first cord guide channel opening **146**. The half-circle notch located on the opposite side from cover side cord access way **124**, on the cover periphery wall **122**, is the cover side second cord guide channel opening **144**. In the preferred embodiment, the half-circle notches located on the lock component cover **120** are approximately equal in size and shape to the half-circle notches shown in FIGS. **4**A and **4**B. In other embodiments, these notches may not equal the size and shape of notches located, about the base periphery wall **160** of lock component base **150**. In other embodiments, these notches may be other shapes, as for example rectangle, so that a portion of cord **20** may reside.

As shown in FIGS. **6**A and **6**B, cover side depression **129** is located adjacent to cover periphery wall **122**. In the preferred embodiment, the cover side depression **129** is spherical in shape. The cover side depression **129** is enclosed by the internal side cover ceiling **121** at the bottom and almost entirely by walls extending in connection from the cover periphery wall **122** around sides of the cover side depression **129**. Cover side tunnel **127** provides access to a side of the cover side depression **129**. Cover side tunnel **127** extends from the side of the cover side depression **129** to cover side portal **128**. In other embodiments, location of the cover depression **129**, cover side tunnel **127**, and/or cover side portal **128** may be different. Location may coincide with location of the base side depression **169**, base side tunnel **167**, ardor base side portal **168** for proper alignment of the cover side depression, portal, and tunnel over the base side depression, portal, and cover when the lock component cover **120** is attached to the lock component base **150**.

Supplemental ceiling recess **135** is shown as to portion of the internal side cover ceiling **121**, having a lower surface height than the internal side cover ceiling **121**. The reverse side of the supplemental ceiling recess **135** is the external side cover ceiling **123** (see FIG. **7**). The location of the supple-

mental ceiling recess **135** and the difference in surface height of the supplemental ceiling recess **135** from the surface height of the internal side cover ceiling **121** provides additional vacancy for cord knot **21** (see FIG. **13**), further described in reference to FIGS. **12** and **13**. In addition, a primary ceiling recess **130** and secondary ceiling recess **136** are located within the internal side cover ceiling **121**. As shown in FIGS. **6**A and **68**, the primary ceiling recess **130** and secondary ceiling recess **136** are shown adjacent to the supplemental ceiling recess **135**. The primary ceiling recess **130** and secondary ceiling recess **136** are lower in height, and thus recessed further, than the internal side cover ceiling **121** and supplemental ceiling recess **135**. The diameter of the primary ceiling recess **130** is slightly larger than the diameter of the primary knot support post **170**. The diameter of the secondary ceiling recess **136** is slightly larger than the diameter of the secondary knot support post **176**. In other embodiments, location of the primary ceiling recess **130**, secondary ceiling recess **136**, and/or supplemental ceiling recess **135** may depend on the location of the primary knot support post. **172**, secondary knot support post **176**, and/or base floor recess **155** for proper alignment and fitting of the lock component cover **120** with the lock component base **150**. In other embodiments, the primary ceiling recess **130**, secondary ceiling recess **136**, and/or supplemental ceiling recess **135** may not exist in the lock component cover **120**. In other embodiments, more than one supplemental ceiling recess **135** may be located in the internal side cover ceiling **121**.

The lock component housing **104** is formed when the lock component cover **120** is placed over the lock component base **150**. For proper fitting, the lock component cover **120** may be arranged so as to align with the lock component housing **104**. The end of the cylinder shaped primary knot support post **170**, opposite the end connected with the internal side base floor **154**, may fit into the diameter of the primary ceiling recess **130**. The end of the cylinder shaped secondary knot support post **176**, opposite the end connected with the internal side base floor **154**, may fit into the diameter of the secondary ceiling recess **136**. To secure the lock component cover **120** to the lock component base **150**, adhesive may be applied on either or both of the top end of the primary knot support post **170** or on the surface of the primary ceiling recess **130** to secure connection between the primary knot support post **170** and the primary ceiling recess **130**. Alternatively or in addition, adhesive may be applied on either or both of the top end of the secondary knot support post **176** or on the surface of the secondary ceiling recess **136** to secure connection between the secondary knot support post **17** and the secondary ceiling recess **136**. Proper connection of the lock component cover **120** on to the lock component base **150** to form the lock component housing **104** would result from the alignment of the cover side cord access way **124** directly over the base side cord access way **164** to form cord access way **114** of the lock component **100** (see FIG. **3**). Cover side cord tail access way **126** aligns over base side cord tail access way **166** to form cord tail access way **116** (see FIG. **3**). Cover side portal **128** aligns over has side portal **168** to form portal **118**; cover side tunnel **127** aligns over base side tunnel **167**; and cover side depression **129** aligns directly over base side depression **169**. In addition for proper alignment of the lock component cover **120** over the lock component base **150**, the cover side first cord guide channel opening **146** aligns over the base side first cord guide channel opening **182** to form the first cord guide channel opening **110** (see FIG. **17**). The cover side second cord guide channel opening **144** aligns over the base side second cord guide channel opening **184** to form the second cord guide channel opening **112** (see FIG. **17**). Adhesive may also be applied on the top edge of either or both the base periphery wall **160** and/or cover periphery wall **122** for fixed attachment of the lock component base **150** and lock component cover **120**. In other embodiments, one or some of cord access way **114**, cord tail access way **116**, portal **118**, first cord guide channel opening **110**, and/or second cord guide channel opening **112** may be fully located on the periphery of either the lock component cover **120** or lock component base **150**, so as not to be only formed when the lock, component cover **120** is attached to the lock component base **150**.

FIG. **7** illustrates a perspective view of the reverse side of the lock component cover **120**. The external side cover ceiling **123** and external side of the cover periphery wall **122** form the outer external surface of the lock component cover **120** forming part of lock component housing **104**. In the preferred embodiment, and as shown in FIG. **7**, the external side cover ceiling **123** surface is flat. In other embodiments, external surface may be rounded, dimpled, smooth, and/or rough.

In other embodiments, particular pieces formed in the lock component base **150** may alternatively or additionally be formed in the lock component cover **120** and vice versa. For example, primary knot support post **170** and secondary knot support post **176** may be located in the lock component base **150** and the first base guide wall **186** and second base guide wall **188** located in the lock component cover **120**. Supplemental base support wall **189** may be located in the lock component cover **120**, or additional base support walls may be located in the lock component cover **120** and/or lock component base **150**. Any arrangement of pieces may exist between lock component base **150** and lock component cover **120**.

FIG. **8**A illustrates a perspective view of the crossover component base **70** of crossover component **50**. FIG. **8**B illustrates a top-down view of the crossover component base **70** shown in FIG. **8**A. The crossover component base **70** includes a crossover internal side base floor **72**. The reverse side of the crossover internal side base floor **72** is the crossover external side base floor **73** (see FIG. **9**). Crossover base periphery wall **74** surrounds the circumference of the crossover internal side base floor **72** extending above and perpendicular to the surface of the crossover internal side base floor **72**. Four half-rectangular notches are located on the crossover base periphery wall **74** about the top edge of the crossover base periphery wall **74**, wherein the top edge is furthest from connection with the internal side base floor **72**. As shown in the foreground of the crossover component base **70** perspective view of FIG. **8**A, the left half-rectangular notch shown is the base side first crossover cord guide channel opening **82**. The right half-rectangular notch shown is the foreground is the base side fourth crossover cord guide channel opening **94**. First crossover cord guide channel **80** runs from the base side first crossover cord guide channel opening **82**, between two parallel guide walls, to the base side second crossover cord guide channel opening **84**. Second crossover cord guide channel **90** runs from the base side fourth crossover cord guide channel opening **94**, between two other parallel guide walls, to the base side third crossover cord guide channel opening **92**.

As shown in FIGS. **8**A and **8**B, a first outside guide wall **86** and first inside guide wall **88** extend above and perpendicular to the surface of the crossover internal side base floor **72**. Both guide walls extend further in height than the crossover base periphery wail **74** from the surface of the crossover internal side base floor **72**. Both guide walls connect at each end to the crossover base periphery wall **74**. The first outside guide wall **86** and first inside guide wall **88** are located parallel to each other providing a first crossover cord guide channel **80**,

located between the two walls. The length of the first crossover cord guide channel **80** extends between the base side first crossover cord guide channel opening **82** to the base side second crossover cord guide channel opening **84**. Both channel openings are formed between the ends of the parallel guide walls at the connection with the crossover base periphery wall **74**, on the top edge of the crossover base periphery wall **74**.

As shown in FIGS. **5**A and **5**B, a second outside guide wall **96** and second inside guide wall **98** extend above and perpendicular to the surface of the crossover internal side base floor **72**. Both guide walls extend further in height than the crossover base periphery wall **74** from the surface of the crossover internal side base floor **72**. Both guide walls connect at each end to the crossover base periphery wall **74**. The second outside guide wall **96** and second inside guide wall **98** are located parallel to each other providing a second crossover cord guide channel **90**, located between the two walls. The length of the second crossover cord guide channel **90** extends between the third base side crossover cord guide channel opening **92** to the base side fourth crossover cord guide channel opening **94**. Both channel openings are formed between the ends of the parallel guide walls at the connection with the crossover base periphery wall **74**, above the crossover base periphery wall **74**.

As shown in FIGS. **8**A and **8**B, first crossover cord guide channel **80** is approximately equal in width, depth, and length to second crossover cord guide channel **90**. The first crossover cord guide channel **80** is parallel to the second crossover cord guide channel **90** and is located at an approximately equal distance from the center of the crossover component base **70**. In other embodiments, first crossover cord guide channel **80** and second crossover cord guide channel **90** may be located closer to one another. In other embodiments, first crossover cord guide channel **80** and second crossover cord guide channel **90** may not be parallel. In other embodiments, first crossover cord guide channel **80** and second crossover cord guide channel **90** may intersect such that a portion of cord **20** crosses above or below another portion of cord **20**. In other embodiments, only one crossover cord guide channel exists. In one example, with only one crossover cord guide channel in the crossover component **50**, a portion of cord **20** may run along one or more additional portions of cord **20** in the same channel. The one crossover cord guide channel may be wider to accompany multiple portions of cord **20**. In other embodiments, three or more cord guide channels may be located within the crossover component **50**. In other embodiments, the height of the one or more guide walls in the crossover component base **70** may be shorter or approximately equal to the height of the crossover base periphery wall **74**. In other embodiments, cord guide channels may not exist and cord **20** may rest between openings in the crossover component housing **54**.

As shown in FIGS. **8**A and **8**B, a crossover base support wall **76** connects at one end to the first inside guide wall **88** and at the other end to the second inside guide wall **98**. The height of the crossover base support wail **76** is approximately equal to the height of the first inside guide wall **88** and second inside guide wall **98**. In other embodiments, the height of the crossover base support wall **76** may be shorter or higher than the height of the first inside guide wall **88** and second inside guide wall **98**. As shown in FIGS. **8**A and **8**B, the crossover base support wall **76** runs generally perpendicular to the first inside guide wall **88** and second inside guide wall **98**. The crossover base support wall **76**, as shown in FIG. **8**A, is designed with multiple curves. In other embodiments, the crossover base support wall **76** may be a straight with no curves. The crossover base support wall **76** serves to support the crossover component housing when the crossover component cover **61**) is attached to the crossover component base **70**. The crossover base support wall **76** supports the vacancy near center of the crossover component housing **54** so that force applied about the center of the crossover component housing **54** externally on the crossover external side base floor **73** (see FIG. **9**) and/or on the crossover cover external side ceiling **65** (see FIG. **11**) may not snap or break connection of the crossover component base **70** and crossover component cover **60** along the periphery walls of the crossover component housing **54**. In other embodiments, two or more crossover base support walls may be incorporated. In other embodiments, the crossover base support wall **76** may be located in any position on the crossover internal side base floor **72**. For example, the crossover base support wall **76** may be located in parallel to the first and second cord guide channels and connected at the ends to the crossover base periphery wall **74**. In other embodiments, the crossover base support wall **76** may not connect on one or both ends within the crossover component base **70**. For example, the crossover base support wall **76** may be a cylinder or rectangle, or any other shaped piece extending up from the crossover internal side base floor **72**.

FIG. **9** illustrates a perspective view of the reverse side of the crossover component base **70**. The crossover external side base floor **73** and external side of the crossover base periphery wall **74** form part of the outer external surface crossover component housing **54**. In the preferred embodiment, and as shown in FIG. **9**, the crossover external side base floor **73** surface is flat. In other embodiments, external surface may be rounded, dimpled, smooth, and/or rough.

FIG. **10** illustrates a perspective view of the crossover component cover **60** of crossover component **50**. The crossover component cover **60** includes a crossover internal side cover ceiling **63**. The reverse side of the crossover internal side cover ceiling **63** is the crossover external side cover ceiling **65** (see FIG. **11**). Crossover cover periphery wall **61** surrounds the circumference of the crossover internal side cover ceiling **63** extending above and perpendicular to the surface of the crossover internal side cover ceiling **63**. Four half-rectangular notches are located on the crossover cover periphery wall **61** about the top edge of the crossover cover periphery wall **61**, wherein the top edge is furthest from connection with the crossover internal side cover ceiling **63**. As shown in the foreground of the crossover component cover **60** perspective view of FIG. **10**, the furthest left half-rectangular notch shown is the cover side second crossover cord guide channel opening **64**. The half-rectangular notch shown right of the cover side second crossover cord guide channel opening **64** in the foreground view is the cover side third crossover cord guide channel opening **68**. The half-rectangular notch located on the opposite side of the crossover component cover **60**, across the diameter of the crossover component cover **60**, from the cover side second crossover cord guide channel opening **64**, on the crossover cover periphery wall **61**, is the cover side fourth crossover cord guide channel opening **66**. The half-rectangular notch located, on the opposite side of the crossover component cover **60** across the diameter of the crossover component cover **60**, from the cover side third crossover cord guide channel opening **68**, on the crossover cover periphery wall **61**, is the cover side first crossover cord guide channel opening **62**. In the preferred embodiment, the half-rectangular notches located on the crossover component cover **60** are approximately equal in size and shape to the half-rectangular notches shown in FIGS. **8**A and **8**B of the crossover component base **70**. In other

embodiments, these notches may not equal the size and shape of notches located about the crossover base periphery wall **74** of crossover component base **70**. In other embodiments, these notches, whether on the crossover cover periphery wall **61** or crossover base periphery wall **74**, may be other shapes, as for example circular, so that a portion of cord **20** may reside.

As shown in FIG. **10**, the crossover internal side cover ceiling **63** has a flat surface. In other embodiments, the ceiling **63** may have recessed portions, as for example running between the cover side second crossover cord guide channel opening **64** to the cover side first crossover cord guide channel opening **62** and from the cover side third crossover cord guide channel opening **68** to the cover side fourth crossover cord guide channel opening **66**. These recessed portions might provide a channel to support larger width cord **20** that may not fully fit in the first crossover cord guide channel **80** or second crossover cord guide channel **90** of FIG. **8**A. In another embodiments, and in addition to or in alternative of recessed portions on the crossover internal side cover ceiling **63**, to support cord **20**, guide walls may exist on the surface of the crossover internal side cover ceiling **63**. A pair of guide walls may run each from cover side second crossover cord guide channel opening **64** to the cover side first crossover cord guide channel opening **62** and from the cover side third cord crossover guide channel opening **68** to the crossover cover side fourth cord guide channel opening **66**. The distance between the guide channels in each pair may match the width of the openings thus forming additional guide height when aligned over the guide walls of the crossover component base **70** (see FIG. **8**A).

The crossover component housing **54** is formed when the crossover component cover **60** is placed over the crossover component base **70**. For proper fitting, the crossover component cover **60** may be arranged so as to align with the crossover component base **70**. Proper connection of the crossover component cover **60** on to the crossover component base **70** to form the crossover component housing **54** would result from the alignment of the cover side first crossover cord guide channel opening **62** directly over the base side first crossover cord guide channel opening **82** to form first crossover cord guide channel opening **42** of the lock component **100** (see FIG. **3**). Cover side second crossover cord guide channel opening **64** directly aligns over base side second crossover cord guide channel opening **84** to form second crossover cord, guide channel opening **44** (see FIG. **17**). Cover side fourth crossover cord guide channel opening **66** directly aligns over base side fourth crossover cord guide channel opening **94** to form third crossover cord guide channel opening **46**. Cover side third crossover cord guide channel opening **68** directly aligns over base side third crossover cord guide channel opening **92** (see FIG. **17**) to form fourth crossover cord guide channel opening **48**. The crossover component cover **60** connects with the crossover component base **70** along the top edge of the crossover base periphery wall **74** with the top edge of the crossover cover periphery wall **61** (see FIG. **3**). In some embodiments, adhesive may be applied to the top edge of the either or both the crossover base periphery wall **74** and/or crossover cover periphery wall **61** to secure connection of the crossover component base **70** with the crossover component cover **60** forming the crossover component housing **54** at the crossover component housing seam **52** (see FIG. **3**). In other embodiments, one or some of the first cord guide channel opening **42**, second crossover cord guide channel opening **44**, third crossover cord guide channel opening **46**, and/or fourth crossover cord guide channel opening **48** may be fully located on the periphery of either the crossover component cover **60** or crossover component base **70** so as not to be only formed when the crossover component cover **60** is attached to the crossover component base **70**.

FIG. **11** illustrates a perspective view of the reverse side of the crossover component cover **60**. The crossover external side cover ceiling **65** and external side of the crossover cover periphery wall **61** form part of the crossover component housing **54**. In the preferred embodiment, and as shown in FIG. **11**, the crossover external side cover ceiling **65** has a flat surface. In other embodiments, external surface may be rounded, dimpled, smooth, and/or rough.

In other embodiments, particular pieces formed in the crossover component base **70** may alternatively or additionally be formed in the crossover component cover **60** and vice versa. For example, first outside guide wall **86**, first inside guide wall **88**, second outside guide wall **96**, and second inside guide wall **98** may be located in the crossover component base **70** and the crossover base support wall **76** located in the crossover component cover **60**. In another example, inside guide walls may be located in the crossover component cover **60** with outside crossover guide walls located in the crossover component base **70** so that first crossover cord guide channel **80** and second crossover cord guide channel **90** are conned after the crossover cover **60** is connected to the crossover component base **70**. Any arrangement of pieces may exist between crossover component cover **60** and crossover component base **70**.

FIG. **12** illustrates process **200** for creating the surround security device **10** and applying the device **10** on a product. FIGS. **13** through **17** may be viewed in conjunction with the process illustrated in FIG. **12**.

As shown in FIG. **12**, cord knot **21** is created at step **202**. Cord **20**, used in the surround security device **10**, may be any one of, but not limited to: string; twine; cable; wire; or monohim. An example of mono-film may be fishing wire. Cord **20** may be rigid or elastic. Material within the cord **20** may contain, but is not limited to: metallic properties, such as steel; plastic; cloth; rubber, wool, silk, multi-threaded material, and/or fabric.

FIG. **13** illustrates formed cord knot **21** with cord **20**. Cord tad **22** is shown as one end of cord **20** in FIG. **13**. Cord knot **21** represents a portion of cord **20**. The remainder of the cord **20** to cord head **27** (see FIG. **17**) is not shown in FIG. **13**.

To form the cord knot **21** at step **202**, cord tail **22** is wrapped once under and around a portion of cord **20** and then pulled through to form primary loop **24**. Primary loop **24** runs, as shown in FIG. **13**, beginning at the location on the cord **24**) labeled primary loop entrance cord **23**. Primary loop entrance cord **23** is the portion of cord adjacent to cord knot **21** near primary loop **24**. Primary loop entrance cord **23** is shown entering primary loop **24** in direction a under a portion of cord **20** running in direction d. The primary loop entrance cord **23** is shown running from direction a to direction b over and then under a portion of cord **22** running in direction e to the location on the cord **20** labeled primary loop exit cord **25**. Cord **20** running in direction b then runs in direction e behind cord **20**, running in direction f, and over top cord **20** running in direction g to form the primary loop **24**. From direction c, same cord **20** wraps underneath cord **20** about primary loop entrance cord **23** in direction a, in direction d. From direction d, cord **20** exits the primary loop **24** above cord **20**, running in direction a, to location of primary loop exit cord **25**. A secondary loop **26** is formed by cord **20** between location of primary loop exit cord **25** and secondary loop exit cord **27**, beginning with cord **20** running in direction e and then ending where cord **20** re-enters primary loop **24** in direction f. Cord **20** runs from direction f through the primary loop **24** and exits primary loop **24** in direction g. Cord **20** exiting the primary

loop **24** in direction g is labeled cord tail **22**. The knot created by cord **20**, consisting of the primary loop **24** and secondary loop **26**, is the cord knot **21**, as shown in FIG. **13**.

Referring again to FIG. **12**, at step **204** the cord knot **21** is placed in lock component base **150**. FIG. **14** illustrates the cord knot **21** positioned inside the lock component base **154**) of lock component **100**. At step **204**, the cord knot **21** is placed within the lock component base **150**. Primary loop **24** of cord knot **21** is placed around primary knot support post **170**. Secondary loop **26** of cord knot **21** is placed around secondary knot support post **176**. Cord **20** at location of primary loop entrance cord **23** is placed in the base side cord access way **164**. Cord tail **22** of cord **20** is placed in base side cord tail access way **166**.

Referring again to FIG. **12**, following step **204**, secondary cord loop **26** is constricted and positioned flush around secondary knot support post **176** at step **206**. To constrict secondary loop **26** around secondary knot support post **176**, cord tail **22** is pulled by a force in direction A (see FIG. **14**). With primary loop **24** not yet tightened around primary knot support post **170**, space is provided between the primary knot support post **170** and primary loop **24** to allow cord to move in direction f and g (see FIG. **13**). A pulling force on cord tail **22** in direction A allows for cord **20** to slide in direction f and g (see FIG. **13**) so that secondary loop **26** constricts around secondary knot support post **176**. A machine or person can grab cord **20** at cord tail **22** extending externally out of the base side cord tail access way **166**. With cord **20** flush against secondary knot support post **176**, as shown in FIG. **14**, the lock component cover **120** may be attached to the lock component base **150** with less possibility of pinching and or otherwise obstructing cord **20** from moving around the secondary knot support post **176**, in for example step **214**.

Referring again to FIG. **12**, at step **208**, portions of cord **20** are placed in guide channels of both the lock component base **150** and crossover component base **70**. Cord **20**, in particular cord head knot **28**, may also be placed in base side depression **169** of lock component base **150** at step **208**. FIG. **15** illustrates cord **20** located in the guide channels of both the crossover component base **70** and lock component base **150**. A portion of cord **20** is placed first crossover cord guide channel **80**, wherein cord **20** exits crossover component base **70** from channel **80** at the base side first crossover cord guide channel opening **82** and the base side second crossover cord guide channel opening **84**. A portion of cord **20** is also placed in second crossover cord guide channel **90**, wherein cord **20** exits crossover component base **70** from channel **90** at the base side third crossover cord guide channel opening **92** and base side fourth crossover cord guide channel opening **94**. A portion of cord **20** is also placed in cord guide channel **180**, wherein cord **20** exits the cord guide channel **180** of lock component base **150** at the base side first cord guide channel opening **182** and base side second cord guide channel opening **184**. As shown in FIG. **15** in the preferred embodiment, a portion of cord **20**, running externally from base side cord access way **164** to base side first cord guide channel opening **182**, runs within the crossover component base **70**, in first crossover cord guide channel **80**. A portion of cord **20**, running externally from base side portal **168** to base side second cord guide channel opening **184**, runs within the crossover component base **70**, in second crossover cord guide channel **90**.

Cord **20** may slide in either direction through the guide channels of both the lock component base **150** and crossover component base **70**. Cord **20** may be slid through the guide channels to either shorten or lengthen sections of cord **20**, located between guide channel openings on the component base **150** and crossover component base **70**.

In some embodiments, step **208** may occur anytime before, during, or after forming cord knot **21** with cord **20** in step **202**. In other embodiments, step **208** may occur anytime before, during, or after positioning the cord knot **21** inside the lock component base **150** of lock component **100** in step **204**. In other embodiments, step **208** may occur anytime before, during, or after condensing secondary loop **26** around secondary knot support post **176** in step **206**. In other embodiments, step **208** may occur anytime before, during, or after attaching the crossover component cover **60** to the crossover component base **70** and/or attaching the lock component cover **120** to the lock, component base **150**, further described in step **210**.

As shown in FIG. **15**, and shown enlarged in FIG. **16**, a cord head knot **28** is formed at the end of cord **20** about cord head **27**. Cord head knot **28** is formed in size to fit at least the lower hemisphere of cord bead knot **28** within base side depression **169**. Cord **20** extending at about cord head **27** from cord head knot **28** is placed in base side depression **169** with cord **20** extending therefrom placed in base side tunnel **167** and through base side portal **168**. Cord head knot **28** may be placed in base side depression **169** anytime prior to step **210**. The cord head knot **28** cannot be removed from the lock component **100** after the lock component cover **120** and lock component base **150** are attached. In other embodiments, if no base side depression **169**, or cover side depression **128** exists, then cord **20**, in proximity to cord head **27**, may be attached externally to the lock component device **150** or to cord tail **22**. For example, cord head **27** may be attached by adhesive to the external surface of the lock component housing **104**.

Referring again to FIG. **12**, at step **210** the crossover component cover **60** is aligned and fitted over the crossover component base **70** and the lock component cover **120** is aligned, and fitted over the lock component base **150**. The covers may be sealed to the base along the crossover component housing seam **52** and lock device housing seam **102** respectively. In other embodiments, step **210** may occur before pulling on cord **20**, in for example step **206**.

FIG. **17** illustrates the surround security device **10** with the crossover component cover **60** connected to the crossover component base **70** forming the crossover component housing **54** and the lock component cover **120** connected to the lock component base **150** forming the lock component housing **104**. Both the crossover component housing **54** and lock component housing **104** are shown as transparent so as to provide view of cord **20** positioned within, in addition, an EAS element **365** is shown in the crossover component **50**, as further described in reference to FIGS. **18** and **19**.

Referring again to FIG. **12**, at step **212** the surround security device **10** is placed around a product. The lock component **100** and crossover component **50** are positioned on opposite sides of a product from one another. For example and referring again to FIG. **17**, the crossover component **50** may be laid on a flat surface, such as a table, and then the product lay directly on top. The lock component **100** may then be positioned on the top of the product opposite the crossover component **50** on which the product is resting.

In other embodiments, external side base floor **152** or external side cover ceiling **123** of lock component housing **104** may include an adhesive substance to attach the lock component **100** to the product. In other embodiments, in alternative to or in addition to an adhesive substance on the lock component **100**, the crossover external side base floor **73** or crossover external side ceiling cover **65** of crossover component housing **54** may include an adhesive substance to attach the

crossover component **50** to the product. The adhesive substance may include, for example but is not limited, to glue or two-sided tape.

With either or both the lock component **100** and/or crossover component **50** secured in position about the product, with or without the addition of adhesive, cord **20** may be fit around the sides of the product. First cord section **31** shown extending from first crossover cord guide channel opening **42**, located about the periphery wall of the crossover component housing **54**, to the cord access way **114**, about the periphery wall of the lock component housing **104**, in FIG. **17**, is shown around product **5** in FIG. **2**. Second chord section **32**, shown extending from fourth crossover cord guide channel opening **46**, located about the periphery wan of the crossover component housing **54**, to the portal **118**, located about periphery wall of the lock, component housing **104**, in FIG. **17**, is shown around product **5** in FIG. **2**. A third cord section **33** shown extending from second crossover cord guide channel opening **44**, located about the periphery wall of the crossover component housing **54**, to the first cord guide channel opening **110**, about the periphery wall of the lock component housing **104**, in FIG. **17**, is shown around product **5** in FIG. **2**. A fourth cord section **34**, shown extending from third crossover cord guide channel opening **48**, located about the periphery wall of the crossover component housing **54**, to the second cord guide channel opening **112**, about the periphery wall of the lock component housing **104**, in FIG. **17**, is shown around product **5** in FIG. **2**.

Referring again to FIG. **12**, once the lock component **100**, crossover component **50**, and cord **20** are positioned around the product in step **212**, cord **20** may then constricted so as to be tightened around the product in step **214**. To tighten cord **29** around product, cord tail **22** is pulled by a force in direction A (see FIG. **14**). By pulling cord tail **22**, cord **20** moves in path direction a through g, as described in FIG. **13**, around the primary knot support post **170** and secondary knot support post **176** so as to constrict the length of cord **20** between cord head **27** and cord **20** at location of primary loop entrance cord **23**. This in effect tightens cord **20** between the lock component **100** and crossover component **50** of the surround security device **10** around the product. Cord tail **22** may be pulled until cord **20** sufficiently secures the surround security device **10** around the product. For example, a retailer may tighten the surround security device **10** around a product so that a potential thief can not shimmy, or otherwise manipulate the product away from the surround security device **10**.

Referring again to FIG. **12**, at step **216**, cord **20** is locked in place with cord knot **21**. FIG. **16** illustrates cord **20** locked within the lock component housing **104**. At step **216**, cord **20** is pulled with a force at the location of the primary loop entrance cord **23**, in direction B, to constrict primary loop **24** around primary knot support post **170**. The pulling creates compression of primary loop **24** onto cord **20**, running in direction f and g, against primary knot support post **170**. After an amount of compression of primary loop **24** to bind cord tail **22** to the primary knot support post **179**, cord **20** cannot slide in direction f or g if cord tail **22** is pulled in direction A. With primary loop **24** compressed around primary knot support post **170**, cord **20** can no longer be pulled in either direction A or B resulting in as locked state for the surround security device **19** about the product.

Arrangement of primary knot support post **170**, secondary knot support post **176**, base side cord access way **164**, and base side cord tail access way **166** in the lock component **100** should exist so as to allow for the positioning, and utilization of cord knot **21** within the lock component **100**. As shown in FIGS. **4**A and **48**, base side cord access way **164** and base side cord tail access way **166** are located in proximity along the base periphery wall **154**. Base side cord access way **164** and base side cord tail access way **166** may be located closer or further apart along the base periphery wall **154** so long as a force of pull on cord **20**, at or near location of primary loop entrance cord **23**, can tighten primary loop **24** to lock cord knot **21** and so long as a force of pull on cord tail **22** allows for cord **20** to move through primary loop **24** and secondary loop **26** to shorten cord **20** external of the lock component **100** between the base side portal **168** and base side cord access way **164**. The secondary knot support **176**, base side cord access way **164**, and base side cord tail access way **166** may be viewed in FIGS. **4**A and **4**B, as each forming points of a triangle. For proper functionality of the cord knot **21**, primary knot support post **170** is located in the plane or about the edges of the triangle formed between the end points of the secondary knot support **176**, base side cord access way **164**, and base side cord tail access way **166**.

Referring to FIG. **17**, cord tail **22**, located external of lock device **100** from cord tail access way **116**, may be cut after locking the surround security device **10** about the product in step **216**. In some embodiments, a blade may be attached to either or both the base side cord tail access way **166** and/or cover side cord tail access way **126** (see FIGS. **4**A and **6**A). The blade edge of a blade attachment would face the opening of cord tail access way **116** where a portion of cord tail **22** resides. The blade may have a straight edge or a curved edge. For example, the curve edge may match the circumference of the half-circle shape of the notch in either the base side or cover side cord tail access way. The blade may also have as wavy edge or an angled edge, including teeth. Cord tail **22** may be cut by the blade by pulling cord tail **22** in a direction towards either the lock component base **150** or lock component cover **120**, wherever the blade is attached. A pull force of cord tail **22** against the edge of the blade will cut away cord tail **22**. In other embodiments, a down force on the external side base floor **152** and/or external side cover ceiling **123** in proximity to the cord access way **114** could move the blade edge against the cord tail **22** portion, located in the cord access way **114**, to cut the cord tail **22**. In other embodiments, the cord tail **22** may be cut by a retailer or other person. Cord tail **22** may also be left to hang or dangle from the lock component **100**.

After a consumer purchases the product, the surround security device **10** may be cut away form the product and/or product packaging and removed.

In other embodiments, crossover component **50** may be considered a hard tag by including a security element within. In the electronic article surveillance WAS) industry, a "hard tag", refers to a re-usable tag which is intended to be removed from an article, e.g., merchandise at the point of sale to be re-used on other merchandise. Hard tags typically are constructed to contain an EAS element, which may be for example an acousto-magnetic element, a radio frequency element (RF), or electro-magnetic element (EM); or radio frequency identification (RFID) element, which may be respond at high and ultra high frequencies. An EAS element may include a resonant circuit with a coil coupled to a capacitor. The EAS security element is tuned to a predetermined frequency and if one attempts to removed the hard tag with the security element from a store, an alarm triggers as the tag passes through a surveillance field created by a transmitter, located between pedestals at the store exit, tuned to the same frequency. The alarm goes off as the EAS element resonates, providing an output signal detected by a receiver, also located in the pedestals. An RFID element typically includes an integrated circuit (IC) and an RF LC circuit (resonant circuit) or

antenna (e.g. a dipole antenna), tuned to a predetermined RF frequency. Often, the integrated circuit IC comprises a memory that has been programmed with information associated with the article (e.g. product ID information such as a serial number, unique identification number, price, etc.). When a transmitter emits a signal at the predetermined RF frequency which is received by the tuned antenna, the RFID element emits a signal containing the stored information which is then received by a receiver and the information demodulated from the element-emitted signal. This information can then be used for, among other things, determining whether to set off an alarm or not.

As a hard tag, the crossover component **50** may be removed by a retail employee at the point of sale to be reused on other merchandise. For example, the re-used crossover component **50** as a hard tag may not include any adhesive, unlike perhaps the lock component **100** which may include adhesive to remain affixed to the product. Cord **20** may be cut at any section so as to be slipped out through the one or more cord guide channels in the crossover component **50**. In other embodiments, the crossover component **50** as a hard tag may not be reused and may remain on the product for disposal by the customer. The security element may be deactivated by the retailer so as not to trip alarms after the point of sale.

FIG. **18** illustrates an EAS element **365** located inside crossover component cover **60**. The EAS element shown is one type of security element. Another type of security element may be an RFID element. As shown in FIG. **18**, the circumference of the EAS coil **366** fits within the circumference of the crossover cover periphery **61**. The connected EAS coil **366** and EAS capacitor **367**, forming the EAS element **365**, may be placed anytime within the crossover component cover **60** before the crossover component cover **60** is attached to the crossover component base **79**. In other embodiments, adhesive may be applied to the EAS element **365** for attachment to the crossover cover internal side ceiling **63** or external side ceiling **73**.

FIG. **19** illustrates an EAS element **365** located on the crossover component base **70**. As shown in FIG. **19** the EAS element **365** may be placed over and/or attached, as for example with adhesive, to the upper edge of the crossover base support wall **76**, first outside guide wall **86**, first inside guide wall **88**, second inside guide wall **98**, and second outside guide wall **96**. The EAS element **365** may be attached after cord **20** is positioned within first crossover cord guide channel **80** and second cord guide channel **90**.

In other embodiments, an RED element (not shown) may be placed and/or adhered to the inside of the crossover component cover **60** or crossover component base **70**. In other embodiments, the EAS element **365** or RFID element may be located within the lock component housing **104** as placed either inside the lock component cover **120** or lock component base **150**. In other embodiments, an EAS element **365** may be located in both the lock component housing **194** and crossover component housing **54**. In other embodiments, an EAS element **365** and/or RFID element may both be located in or externally on the lock component housing **104** and/or crossover component housing **54**. In other embodiments, the EAS element **365** may be located in or on the lock component housing **104** and the RFID element in or on the crossover component housing **54**, or vice versa.

In other embodiments, the surround security device **10** may include the lock component **100** and cord **20**, without a crossover component **50**. On a product, the cord portion that would be housed in the first crossover cord guide channel **89** can be crossed with the cord portion that would be housed in the second crossover cord guide channel **90** so that the cord **20** interlocks with itself at the crossing junction. Crossing and re-crossing the cord **20** at that junction requires cord **20** to be removed from lock device housing **104**. After crossed, forming cord knot **21** and placing locking knot **21** in lock device housing **104** may follow. In other embodiments, the same sections of cord **20**, that would cross at the crossing junction, may be for example; twisted, bound, tied, or united in any other manner so that the surround security device may be secured around a product.

In other embodiments, one or more crossover components **50** may be used in the same surround security device **10**. For example, one crossover component **50**, like that shown in FIG. **15**, may be aligned with a copy of the crossover component **50**, so that the two crossover components may be stacked on a side of the product. With adhesive applied to both crossover components, it would take more time for a thief to pry each off, as opposed to prying just one off. In other embodiments, crossover components **50**, having for example only one cord guide channel may be used at various sections of cord **20**. For example, referring to FIG. **2**, crossover components having only one cord guide channel may be used in addition to the crossover component **50** and lock component **100**, shown in FIG. **2**, on all sides of the product. The additional crossover components may be applied to the sides of the box, where the crossover component **50** and lock component **100** are not shown residing. A crossover component may be utilized with first cord section **31** running through; another crossover component may be used with second cord section **32** running through; another crossover component may be used with a third cord section **33** running through; and a fourth crossover component may be used with a fourth cord section **34** running through.

In other embodiments, surround security device **10** may utilize only the lock component **1041** and cord **20**. Cord **20** may run external to the lock component **150** through only two access ways located on the periphery edge wall of the lock component **150**. Cord guide channel **180** and first cord guide channel opening **110** and second cord guide channel opening **112** may not exist on the lock component **100** of the security surround, device **10**. Cord **20** may run external, without running through a crossover component or other guide channels, from the cord access way **114** to portal **118**. Cord tail **22** may extend from cord tail access way **116**. The single cord **20** and lock component **100** may surround to portion of the product together. In this and other embodiments, lock component **100** and cord **20** may be hung from a product.

Although this disclosure has been described with reference to exemplary embodiments, it is not limited thereto. Those skilled in the art will appreciate that numerous changes and modifications may be made to the preferred embodiments and that such changes and modifications may be made without departing from the true spirit of this disclosure. It is therefore intended that the appended claims be construed to cover all such equivalent variations as fall within the true spirit and scope of this disclosure.

What is claimed is:

**1**. A security device for a product comprising:

a lock housing;

a first support post and a second support post positioned within the lock housing;

a cord configured to at least partially surround the product and constrict about the product, wherein the cord includes a knot having (1) a first loop configured to engage with the first support post within the lock housing to lock the cord about the product at a predefined length and (2) a second loop; and

a cord tail included on an end of the cord, wherein pulling the cord tail in a direction away from the second support post results in the second loop engaging the second support post and constricting upon the second support post.

**2**. The security device of claim wherein the lock housing comprises:

a first outlet located about a periphery of the lock housing; and

a second outlet located about a periphery of the lock housing in proximity to the first outlet.

**3**. The security device of claim **2**, wherein the first support post is positioned approximately between the second support post, the first outlet, and the second outlet.

**4**. The security device of claim **3**, wherein the knot adjacent cord portion is located through the first outlet and the tail end is located through the second outlet.

**5**. The security device of claim **4**, wherein the knot further comprises:

the second loop positioned through the first loop;

wherein the cord length constricts between the head end and the knot adjacent cord portion when the tail end is pulled away externally from the second outlet of the housing to move the cord around the first support post in the first loop and around the second support post in the second loop;

wherein the first loop constricts around the second loop and the tail end at the first support post to restrict movement of the cord around the first loop and the second loop when the knot adjacent cord portion is pulled away externally from the first outlet of the housing to lock the constricted length of the cord about the product.

**6**. The security device of claim **4**, wherein the lock housing comprises a blade, attached in proximity to the second outlet, to cut away the tail end of the cord.

**7**. The security device of claim **2**, wherein the lock housing comprises:

a lock housing guide channel positioned inside the lock housing; and

a pair of lock housing openings, wherein each lock housing opening of the pair of lock housing openings is located about the periphery of the lock housing;

wherein the lock housing guide channel runs between each lock housing opening;

wherein a section of the cord, between the knot adjacent cord portion and head end, is positioned in the lock housing guide channel and through the pair of lock housing openings.

**8**. The security device of claim **1**, further comprising one or more crossover housings comprising:

at least one guide channel positioned inside the crossover housing; and

at least one pair of crossover openings, wherein each crossover opening of the pair of crossover openings is located about the periphery of the crossover housing;

wherein the crossover guide channel runs between each crossover opening; and

wherein a section of the cord, external of the lock housing, is positioned in the crossover guide channel and through the pair of crossover openings.

**9**. The security device of claim **8**, wherein at least one side of the crossover housing comprises an adhesive to fasten the crossover housing to the product.

**10**. The security device of claim **8**, wherein the crossover housing further comprises at least one crossover housing support wall, positioned within the crossover housing, to counter an external force on the crossover housing.

**11**. The security device of claim **8**, wherein the crossover housing further comprises a security element positioned within the crossover housing and wherein the security element is selected from at least one of an EAS element or an RFID element.

**12**. The security device of claim **11**, wherein the lock housing further comprises a security element positioned within the lock housing and wherein the security element is selected from at least one of an EAS element or an RFID element.

**13**. The security device of claim **1**, wherein at least one side of the lock housing comprises an adhesive to fasten the lock housing to the product.

**14**. The security device of claim **1**, wherein the lock housing further comprises at least one lock housing support wall, positioned within the lock housing, to counter external force on the lock housing.

**15**. The security device of claim **1**, wherein material of the cord is selected from at least one of metal, plastic, cloth, rubber, wool, or silk.

**16**. The security device of claim **1**, wherein the lock housing further comprises a security element positioned within the lock housing and wherein the security element is selected from at least one of an EAS element or an RFID element.

**17**. A method for securing a product comprising:

positioning a first support post within a lock housing;

surrounding a portion of the product with a cord, wherein the cord includes a knot and the knot includes a first loop;

engaging the first loop of the knot with the first support post within the lock housing;

pulling a tail end of the cord away externally from a second outlet of the lock housing and from the knot to constrict the length of the cord between a head end of the cord and a knot adjacent cord portion of the cord, located through a first outlet, wherein the first outlet and second outlet are located about a periphery of the lock housing, the head end is positioned in the housing, and the knot adjacent cord portion is located approximate to the knot on the opposite side of the knot from the tail end;

pulling the knot adjacent cord portion away externally from the first outlet to constrict a first loop of the knot around a second loop of the knot and the tail end at a first support post in the lock housing, wherein the lock housing comprises (1) a base having the first support post and a second support post positioned within, and (2) a cover, the first support post being positioned approximately between the second support post, the first outlet, and the second outlet;

locking the cord in place around the product at a predefined length; and

surrounding at least a portion of the product with part of the cord.

**18**. The method of claim **17**, further comprising:

forming the knot in the cord; and

positioning the knot into the base of the lock housing prior to tightening to constrict the length of the cord.

**19**. The method of claim **18**, wherein forming the knot comprises:

forming the first loop in the knot with the tail end of the cord and the cord;

forming the second loop in the knot with the tail end between the tail end and the first loop; and

passing the tail end about the second loop through the formed first loop.

**20**. The method of claim **19**, wherein positioning the knot into the base of the lock housing comprises:

positioning the formed first loop around the first support post in the base;

positioning the formed second loop around the second support post in the base;

positioning the knot adjacent cord portion of the cord into the first outlet; and

positioning the tail end of the cord into the second outlet.

**21**. The method of claim **20** further comprising placing the head end of the cord into the base portion.

**22**. The method of claim **20** further comprising attaching the cover to the base prior to surrounding the portion of the product.

**23**. The method of claim **22** further comprising positioning a security element into the lock housing prior to attaching the cover to the base, wherein the security element is selected from at least one of an EAS element or an RFID element.

**24**. The method of claim **22**, further comprising welding the attached cover to the base about a seam about a periphery of the lock housing.

**25**. The method of claim **17**, further comprising:

positioning a section of the cord, external of the lock housing, in one or more crossover guide channels and through one or more pair of crossover openings, wherein the one or more crossover guide channels are located inside one or more crossover bases and the one or more pair of crossover openings are located about the periphery of the crossover base, and wherein the crossover guide channel runs between each crossover opening in the pair of crossover openings;

attaching a crossover cover to the crossover base to form a crossover housing to enclose the section of cord.

**26**. The method of claim **25**, further comprising fastening the one or more crossover housings to the product with adhesive.

**27**. The method of claim **25**, further comprising positioning a security element into the crossover housing prior to attaching the crossover cover to the crossover base, wherein the security element is selected from at least one of an EAS element or an RFID element.

**28**. The method of claim **17**, further comprising fastening the lock housing to the product with adhesive.

**29**. The method of claim **17**, further comprising:

positioning a section of the cord, between the knot adjacent cord portion and the head end, into a lock housing guide channel and through a pair of lock housing openings prior to tightening the cord around the product, wherein the lock housing guide channel is located inside the base and the lock housing openings are located about the periphery of the base, and wherein the lock housing guide channel runs between each lock housing opening in the pair of lock housing openings.

**30**. The method of claim **17**, further comprising cutting the tail end of the cord by a blade attached in proximity to the second outlet of the lock housing after tightening the cord around the product.

**31**. The method of claim **30**, wherein cutting the tail end of the cord comprises forcing the cover down onto the base about the second outlet to move the blade through the cord.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

# CERTIFICATE OF CORRECTION



PATENT NO. : 8,938,997 B2
APPLICATION NO. : 13/732701
DATED : January 27, 2015
INVENTOR(S) : Anthony F. Piccoli et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Specification

Column 1
Line 31, please delete "lock" and insert in place thereof --locks--.

Column 2
Line 40, please delete "in" and insert in place thereof --fit--.
Line 40, please delete "not" and insert in place thereof --knot--.

Column 3
Line 5, please delete "mop" and insert in place thereof --loop--.
Line 41, please delete "ho sing" and insert in place thereof --housing--.
Line 45, please delete "three" and insert in place thereof --force--.
Line 65, please delete "REID" and insert in place thereof --RFID--.

Column 4
Line 21, please delete "haying" and insert in place thereof --having--.
Line 45, please delete "bead" and insert --head--.

Column 5
Line 9, please delete "to" and insert in place thereof --a--.

Column 7
Line 47, please delete "howling" and insert in place thereof --bowling--.

Column 8
Line 45, please delete "thrilled" and insert in place thereof --formed--.

Signed and Sealed this
Thirtieth Day of June, 2015

Michelle K. Lee

Michelle K. Lee
*Director of the United States Patent and Trademark Office*

Column 9
Line 33, please delete "far" and insert in place thereof --for--.
Line 55, please delete "not" and insert in place thereof --knot--.
Line 60, please delete "ID" and insert in place thereof --in--.

Column 10
Line 41, please delete "with" and insert in place thereof --width--.

Column 12
Line 10, please delete "airfare" and insert in place thereof --surface--.
Line 59, please delete "ardor" and insert in place thereof --and/or--.
Line 63, please delete "to" and insert in place thereof --a--.

Column 13
Line 57, please delete "has" and insert in place thereof --base--.

Column 18
Line 22, please delete "conned" and insert in place thereof --formed--.
Line 34, please delete "him" and insert in place thereof --film--.
Line 40, please delete "tad" and insert in place thereof --tail--.

Column 20
Line 18, please delete "bead" and insert in place thereof --head--.

Column 21
Line 60, please delete "as" and insert in place thereof --a--.

Column 22
Line 30, please delete "as" and insert in place thereof --a--.
Line 49, please delete "WAS" and insert in place thereof --EAS--.

Column 23
Line 34, please delete "79" and insert in place thereof --70--.
Line 47, please delete "RED" and insert in place thereof --RFID--.
Line 54, please delete "194" and insert in place thereof --104--.
Line 65, please delete "89" and insert in place thereof --80--.

Column 24
Line 34, please delete "1041" and insert in place thereof --100--.

In the Claims

Column 25
Line 6, please insert --1-- following "claim".
Line 15, please delete "3" and insert --2-- following "claim".